DOCUMENT RESUME

ED 029 971 VT 008 447

By-Peterman, John L.
Competencies of Vocational Plant Facilties Specialists.
Pub Date Sep 68
Note-169p.
EDRS Price MF-$0.75 HC-$8.55
Descriptors-Bibliographies, Educational Facilities, •Job Skills, Masters Theses, •Measurement Instruments, Performance Criteria, •Personnel Selection, Rating Scales, •School Planning, Specialists, Teacher Attitudes, •Vocational Education

In order to develop instruments for use in the selection of vocational plant facilities specialists and their assistants, criteria were established from a literature review in the form of instrument items. These items arranged in two forms were rated by a 10-member jury on their degree of value. A second version was tested on teachers and local administrators in 33 counties. While differences of opinion existed among these three groups, a high degree of association existed for 43 items and a low degree of association existed for six items. It was concluded that the major selection criteria had been identified in the instrument. Versions of the instrument and an extensive bibliography are appended. This M.S. thesis was submitted to Pennsylvania State University. (EM)

ED029971

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The Pennsylvania State University

The Graduate School

Department of Vocational Education

Competencies of Vocational Plant Facilities Specialists

A thesis

in

Vocational Industrial Education

by

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Submitted in partial fulfillment
of the requirements
for the degree of

Master of Science in Education

September 1968

Approved:

June 28, 1968

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ACKNOWLEDGEMENTS

The author wishes to acknowledge his appreciation to his advisors, Dr. George L. Brandon and Dr. Seymour T. Brantner, for guidance, criticism, and encouragement doing this study. He also acknowledges his indebtedness to the members of the Department, especially Dr. William A. Williams, to the central regional coordinators on the staff of the Department of Public Instruction, and to those Vocational Trade and Industrial educators in the Commonwealth of Pennsylvania for their professional assistance and cooperation.

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CHAPTER I

INTRODUCTION

I. HISTORICAL BACKGROUND

In 1965 the "old Board of Education" was abolished in the city of Philadelphia and a "new Board of Education" took over. Those same growing pains in all our cities through the nation was very much in evidence. Some critics said that the varied problems and varied conflicts were in evidence in the schools and those schools should share in the blame for the social pressures that were pointed to as factors leading to riots, not only in North Philadelphia but in leading cities around the nation.

In reviewing the sesquicentennial period of education in Philadelphia, Carr had this to say, in part, about the new board:

> The new board took control of a school system that had been deteriorating for decades. There were 42 schools in daily use that were built in the 19th century. There were 66 schools in daily use that were built before 1906--before fireproof materials began being used.
>
> Perhaps 1500 more teachers were needed. Scores of buildings had not been properly maintained and were in need of major repairs. Overcrowding was commonplace. The system was severely segregated along racial lines. There were virtually no kindergartens. The high school dropout rate was estimated at 46 per cent.
>
> . . . .
>
> The new board proposed a half-billion-dollar school building program that may be unprecendented anywhere.[1]

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[1] John P. Carr, "150 Years of Public Schools--The Saga of Education in Philadelphia," The Philadelphia Inquirer, April 7, 1968 , Section 7, pp. 1-2.

The image of education in this era has been changed in many ways from the image of past decades and will continue to change. Whether or not a forward progress in action toward elimination of educational problems will evolve remains to be seen. There were many causes, some far beyond the control of education. Other causes of problems were, however, directly attributed to education.

For all of education, during the depression years of the 1930's, tax monies on all levels of government, were not available for new site acquisition or the building of school facilities. Immediately following the depression we became involved in World War II and then the Korean War, which mandated all-out efforts of our nation pointed towards winning those conflicts. This meant a critical shortage of materials necessary for school construction.

The Educational Facilities Laboratories,[2] in a report, tells us that, for the first time in many decades, the 1950's showed promise of the building and construction of new schools. Increased populations, movements of rural peoples to urban areas, obsolescence of existing school structures--fifty or more years of age--, and various federal commissions advocating more and expanded programs of education for all of the people, were seen as urgent needs for immediate concern to the national survival in education. For the first time federal monies were appropriated for buildings and equipment in vocational-technical education and Congress showed promise of additional aid for all of education.

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[2] Educational Facilities Laboratories, The Cost of a Schoolhouse, (New York: Ford Foundation, 1960), pp. 18-34.

The Vocational Education Act of 1946, the amended Vocational Act of 1946--Title III, The Appalachian Regional Development Act, Higher Education Facilities Act of 1963, and the Vocational Act of 1963,[3] were the acts which provided for the constructing and/or equipping of vocational school facilities.

With the passage of these above mentioned Acts came a flood of requests to the various states from their local districts for approvals to build and equip vocational schools. Much of the construction was undertaken in great haste--hurried decisions dictated by immediate pressing needs--to provide facilities with no or little bearing on the relationship of the educational philosophy of the communities or the demands of expanding curriculum. This caused concern which is pointed out in a report by an advisory committee to the State Board of Education in Pennsylvania.[4]

According to Venn,[5] billions of dollars have already been spent by local, State and federal agencies in building and equipping vocational-technical facilities in the past decade. This trend in building and equipping facilities will continue to expand for many years to come because nation-wide projections show expanding manpower needs which in turn mandate facilities to be built for the training of such manpower in all phases of the world of work.

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[3] U. S. Department of Health, Education and Welfare, Office of Education, Administration of Vocational Education, Bulletin No. 1 (Washington: U. S. Government Printing Office, Revised 1966), pp. ix,x.

[4] Report of The Advisory Committee to the State Board of Education on School Building Standards, State Board of Education (Harrisburg: Commonwealth of Pennsylvania, 1965), pp. 10-11.

[5] Grant Venn, Man, Education, and Work (Washington, D.C.: American Council on Education, 1964), pp. 129-137.

"Planning" is a term familiar to all educators and lay persons responsible for education in purposes, direction, and achievements. "Long-range planning", however, has only come upon the scene recently because of the growing importance and responsibilities incumbent upon those in authority in education in today's society. Especially, long-range planning for school facilities has been neglected.

Every school district in Pennsylvania, by mandate of the State Board of Education must now submit a "Long-Range Development Program" by July 1, 1968.[6] Many of these school districts will find it difficult to abide by the above mentioned law because of the scarcity of qualified persons to carry out this mandate. There are many other states in a similar predicament.

II. NEED FOR THE STUDY

Tuckman and Schaefer had this to say, in part, about "Facilities and Equipment":

> Systematic investigation must be undertaken to study the variables involved in the construction of vocational-technical facilities and equipment and their effect on the learning process. In order to insure maximal effective use of these facilities, vocational-technical educators must be able to provide architects and builders with educational specifications to be applied to future plans. Concepts such as T.R.C. (Technology--Resource Center for Vocational Education) must be developed if efficient utilization and integration of facilities and equipment

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[6] Report of the Advisory Committee to the State Board of Education on School Building Standards, loc. cit.

> at our disposal, both present and future, are to be employed in training yourh. Only persistent research can produce such concepts.[7]

Larson also made note of the lack of research available in technical education plant facilities and equipment. He writes, in part:

> The increasing needs of larger numbers of students for technical education demands large capital expenditures in physical plant and equipment. Much additional research in this field would be helpful to those individuals who are involved in the planning process. Little research is available directly related to technical education plant and equipment.[8]

In addition to what the above writers have said, this writer after further investigations, concurs with them in their opinion that a lack of related materials does exist in the specific area for determining those competencies needed by vocational educators planning plant facilities now or for the future. Investigation of university catalogs which have courses in "shop management planning" or "plant facilities planning" for the training of vocational educators are found to be elective courses. Because these courses are elective and not mandatory, could be a reason to believe that here lies an important consideration of why there are found so few qualified plant facilities specialists when so many are needed. We are now faced with building many new facilities costing many billions of dollars, for the burgeoning numbers of vocational-technical students needing training or retraining. What kind of competencies are needed in order for educators to plan effective facilities, shops or laboratories and educational specifications?

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[7] Bruce W. Tuckman and Carl J. Schaefer, Review and Synthesis of Research in Trade and Industrial Education (Columbus: The Center for Vocational and Technical Education, 1966), p. 33.

[8] Milton E. Larson, Review and Synthesis of Research in Technical Education (Columbus: The Ohio State University, 1966), p. 27.

The formulation of adequate vocational educational specifications is an important step leading from the recognition of a need for new school-plant facilities to the ultimate acceptance of a plant to fulfill these needs. The rate of construction of school plants throughout this nation grows larger day by day. True economy in school-plant construction is only obtained when the school-plant provides precisely what the educational program demands--certainly no less. It is conceivable that these school-plants will be in use for a long period of time.

In this new technological era the vocational-technical schools will need a great amount of combined assistance for a total planning effort. This assistance will come from administrators, teachers, architects, engineers, advisory committees, and the community. However, upon the administrator and the teacher fall the greatest amount of responsibility for the exploration and compilation of those necessary elements of written educational specifications.

This writer has spent many years working for engineering and architectural firms designing schools and student housing. Further experiences in recent years were gained as a vocational teacher and head of a drafting and design department. It was only natural, then, in making a study that this writer would be concerned with the gathering of information necessary for determining those competencies needed by planners of plant facilities.

III. THE PROBLEM AND SUBORDINATE PROBLEMS

The purpose for investigation of this problem, stated broadly, was fourfold: (1) to develop criteria for the selection of a vocational plant facilities specialist, (2) to develop criteria for the selection of those assistants to a vocational plant facilities specialist, (3) to develop instruments which would be of use in the selection process, and (4) to develop a selected bibliography of informative literature that would be of use to those responsible in the planning, implementation, and evaluation of vocational plant facilities.

The subordinate problems are: (1) to develop and establish a valid and reliable list of competencies to be considered (a) when a role is instituted for the purpose of establishing a position of a vocational plant facilities specialist, and (b) when roles are instituted for the purposes of establishing positions of assistant to the vocational plant facilities specialist, (2) to develop two inventories (a) for use in selecting a vocational plant facilities specialist and (b) for use in selecting assistants to a vocational plant facilities specialist, (3) to determine the validity and reliability of the inventories developed, (4) to examine and compare the attitudes of vocational educators toward vocational plant facilities specialists and their assistants, (5) to examine and compare the attitudes of vocational educators toward educational specifications, (6) to examine and compare the attitudes of vocational educators toward obtaining a selected bibliography of informative literature on plant facilities, and (7) to examine and compare amounts of specific knowledge vocational educators possess at this time about educational specifications.

Limitations

This study shall be limited to those vocational educators within the geographic area of the central region of the Commonwealth of Pennsylvania. These vocational educators are certificated and employed as vocational administrators, full-time teachers and/or part-time teachers in Trade and Industrial Education. This study has not been concerned with any other duties and responsibilities of vocational educators nor did it deal with other organizational problems.

Delimitations

This study will concern itself only in one method of descriptive research, namely the questionnaire survey. This limitation was made necessary because of factors which included time, accessibility of the population, small geographical area, and inclusion of only those educators presently employed in Trade and Industrial Education in thirty-three counties of central Pennsylvania.

Assumptions

This study was based upon the following assumptions:

1. Some of the criteria used in any school organization for the selection of plant facilities specialists and their assistants will apply to the selection of vocational plant facilities specialists and their assistants.
2. Selection of plant facilities specialists and their assistants is a problem of common interest to persons engaged in administration and supervision of vocational

education programs at federal, State, and local levels.

3. Persons employed in positions listed below have had experience in problems dealing with the development of vocational education programs.
    a. University Educators of Vocational Education Programs
    b. State Supervisors of Vocational Education Programs
    c. Administrators of Local Vocational Education Programs
    d. Full-time Teachers in Vocational Education Programs
    e. Part-time Teachers in Vocational Education Programs
4. Persons appointed to the positions listed above are generally considered to be outstanding leaders in vocational education.
5. Opinions based upon the experience of outstanding leaders constitute a highly desirable basis upon which to formulate criteria and evaluative instruments such as proposed.

IV. DEFINITIONS OF TERMS

Terminology varies according to the field in which it is used. The term vocational to various people in education has semantic value different to each individual. These differences indicate a need for defining some of the terms used in this study.

A Vocational Plant Facilities Specialist shall be defined as that person who has competencies in providing: (1) assistance in broad preliminary fact-finding procedures, (2) guidance in analyzing data for use by committees, (3) preparation of a report on the survey of requirements, (4) development of technical applications that result in economy of the preparation of educational specifications,

(5) recommendations on policy and programs in the light of a wide outside experience, and (6) review of plans and proposals prior to school-board endorsement.

Educational Specifications are those necessary written minute descriptions of particulars by which vocational school buildings are planned, implemented, and evaluated. The necessary elements to be presented to the architect through the written instrument designed for this purpose include: (1) identification, (2) philosophy, (3) organization, (4) site selection and development, (5) school environmental factors, and (6) characteristics and specifications of spaces such as library, shops, laboratories, classroom, maintenance, administration suites, food service, circulation, and auditoriums.

An Assistant to the Plant Facilities Specialist is defined as that person who performs and possesses competencies of the same general nature as the specialist but narrower in scope. As used in this study, assistants may be considered to be vocational teachers or advisory committee members or outside consultants or other vocational administrators.

Competencies are defined as being of two kinds. They are: (1) those involving knowledge or understanding, and (2) those involving ability. The competencies described by Walsh as being essential to teachers of trade and industrial education relate to the same categories for those involved in planning plant facilities. They are listed here because the writer believes them to be inherent to this study. They are:

1. Orientation to public education.--To function effectively in the community as an educator and as a citizen, the trade and industrial educator must possess a basic understanding of the philosophy,

principles, objectives, and the role of the public schools in providing for the education of the youth and adults of the community. Such understanding is basic to effective participation and attitude development in the program of trade and industrial education as a part of public education.

2. Interpersonal and group relations.--Competencies in this category are concerned with the educators skill in working with colleagues, parents, and organized groups, as well as with students. Without competence in this area the necessary rapport for the establishment and conduct of a program of trade and industrial education cannot be developed.
3. Understanding the student and the learning situation.--The educator must understand the significance and the causes of individual differences and their effect on the learning process. An understanding of human growth and development and of the effect of stimuli on behavioral patterns is necessary to establish the proper environment for learning.
4. Developing functional curriculums.--In a world of changing technology the necessity exists for continuous curriculum development and revision in order to keep pace with such change. The educators of trade and industrial subjects must possess the competencies required for such curriculum development and revision. He must have a basic understanding of curriculum development procedures. At the same time, he must be able to analyze occupational areas in order to organize instructional content into a functional curriculum.
5. Selecting, developing, and using instructional materials.--The field of occupational instruction is ideally suited for the use of media materials. Effective instruction depends upon the instructor's knowledge of the use of such material and his skill in developing materials to suit his purposes.
6. Teaching methods.--The competent educator of trade and industrial programs should know how to use a wide variety of appropriate media significant to the learner. He must be able to demonstrate a variety of skills, guide the development of attitudes, lead the individual into unusual areas of learning, and measure and evaluate the outcome of such instruction. He must know the most effective techniques for teacher learning situations in the classroom, in the laboratory, in the shop, and on the line in industry.
7. Shop, laboratory, and classroom organization and management.--Efficient organization leads to the proper environment for effective teaching. A knowledge of the paraphenalia of trade and industrial instruction--tools, machines, equipment,

> and supplies--is essential to teaching success in the field. In an instructional area filled with hardware and software, compared to the academic programs, the educator finds himself acting as a quasi shop manager, production foreman, maintenance superintendent, and personnel manager while he fulfills his particular prime role as a teacher or administrator. To the extent that he is able to subjugate the lesser roles to his particular role, he becomes an effective educator of trade and industrial programs.[9]

V. REVIEW OF RELATED LITERATURE AND RESEARCH

Sources of Related Materials

Developing a basic source of information was the first phase of the investigation. A preliminary review of source materials written during the past thirty-five years was conducted during the Fall term of 1967. That review included general research publications such as: Phi Delta Kappa Research Studies in Education; Encyclopedia of Educational Research; American Educational Research Journal; National Education Association Research Bulletin; Review of Educational Research; and Educational Resources Information Center Research in Education.

Those research publications which applied specifically to vocational education included: Research in Industrial Education, Summaries of Studies 1930-55; Research in Industrial Education, Summaries of Studies 1956-59; Research in Industrial Education, Summaries of Studies 1960-61; Review and Synthesis of Research in Technical Education; Review and Synthesis of Research in Home Economics

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[9] John P. Walsh, Teacher Competencies in Trade and Industrial Education, Office of Education, United States Department of Health, Education and Welfare, Vocational Division Bulletin No. 285 (Washington: Government Printing Office, 1960), pp. 3-5.

Education; *Review and Synthesis of Research in Agricultural Education*; *Review and Synthesis of Research in Trade and Industrial Education*; *Journal of Industrial Teacher Education*; *Abstracts of Research and Related Materials in Vocational and Technical Education*; and *American Vocational Association Research Visibility*.

Prime consideration was given to learn of similar studies which may have already been conducted; to develop an understanding of research procedures; and to secure information relative to this study.

The completion of that preliminary investigation led to a second phase--a more intensive review of literature specifically related to this study. It was found, however, that little had been written in professional books, periodicals, unpublished theses and dissertations, and government publications about plant facilities specialists, their assistants, and educational specifications related to vocational education. There was, however, an abundance of material related to educational facilities and planning for all levels of education as a whole. This information was found to be quite valuable for this study.

The related literature and research pertinent to this study seems to lend itself to four subdivisions. The first deals with competency of a plant facilities specialist, the second with an assistant to the plant facilities specialist, the third to plant facilities, and the fourth with related information for a bibliography of suggested reading. A bibliography was developed from this review and compiled on 3 x 5 index cards.

The third phase of the planning was devoted to interviewing the State Director of Technical and Industrial Education and his staff; the four Assistant State Supervisors of Industrial Education; staff members of the Pennsylvania State University--Department of Vocational Education; and various local directors, supervisors, coordinators, and teachers of industrial education. The purpose of such interviews was to obtain suggestions for additional knowledges and abilities needed by those involved in planning vocational plant facilities. Another purpose was the consideration of the type groups through which an analysis of this study could authentically be made. These groups seemed to fall ideally into four classifications for the obtaining of valid and reliable data. One group was composed of those who construct, administer, and teach the professional industrial education courses--the teacher educators. This group of teacher educators was considered to be extremely vital in identification of the content of the items within the selected research instruments. A second group was composed of those who supervise the industrial education teachers--the directors, supervisors, and coordinators. These individuals have the competency to evaluate their whole educational program and are also in a position to directly observe their teachers. Their judgments concerning the items within the selected research instruments should prove to be invaluable. A third group was composed of those who teach industrial education courses to students--the full-time day trade teacher. This group and the fourth group are employed and certificated as vocational teachers and are equally expert in their trade. They are well prepared to make judgments. The fourth group are composed of part-time teachers and, as written above, are equally qualified to make judgments.

Research Studies and Reports

The number of research studies concerned with the subject of educational specifications, plant facilities specialists, and long-range planning were found to be limited. However, studies had been made that gave helpful information to certain aspects of this study.

Perkins[10] conducted a study in 1962 to develop criteria for the selection of locations for area vocational technical schools and to develop score cards for the evaluation of such selections. It was reported by the writer in his conclusions that the purpose of his study had been fulfilled. The criteria applying to attendance areas and satisfactory sites in the future for area vocational-technical schools can also be applied to competencies needed by educators to use such instruments.

Related to the above mentioned study was another study, reported by Perkins, conducted by Schaefer concerned with developing a master plan for post-secondary vocational-technical education for the State of Ohio. He surveyed experts from the surrounding States and their statements relating to locations were summarized and included the following:

1. The post-secondary institute district should have a 40,000 minimum population.
2. There should be a minimum of 2,000 youth of 18-21 years of age in the district.
3. The district should have an 80 million dollar assessed property evaluation.

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[10] Neal Baker Perkins, "The Development of Criteria and Score Cards for Use in Selecting Locations for Area Vocational-Technical Schools" (unpublished Ed. D. dissertation, The Pennsylvania State University, 1962), p. 5.

4. The district should have a minimum of 4,000 youths in the 9-12 grades.
5. The district should be based on an economic division of the state.
6. The institutes should be state aided, but not state controlled.
7. The people of the district should have the privilege of initiating action for an institute by petition.
8. The district should be determined by a majority vote of the people.
9. Travel should be within a twenty mile radius.
10. Dormitories should be provided in certain areas of the state.
11. Eating facilities should be provided.[11]

O'Brian[12] found that the knowledges gained by the intern through experienced activities was high in every area except in that area of school plants. He summarizes this particular aspect of need when he points out this area as showing weakness in providing the interns with experiences which would increase their knowledge of the school plant. In his recommendations he says in part:

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[11] Neal Baker Perkins, "The Development of Criteria and Score Cards for Use in Selecting Locations for Area Vocational-Technical Schools" (unpublished Ed. D. dissertation, The Pennsylvania State University, 1962), p. 15, citing Carl John Schaefer, "A Study to Determine a Master Plan for Post Secondary Vocational-Technical Education for the State of Ohio" (unpublished Ph. D. dissertation, The Ohio State University, 1959).

[12] John L. O"Brian, "An Evaluation of the Professional Internship in Educational Administration" (unpublished Ed. D. dissertation, The Pennsylvania State University, 1963), pp. 47-48.

> It is recommended that further study be made of the possibility of developing a more flexible educational administration program of studies whereby those who have the aptitude and interest in research would elect the dissertation and follow this track to the doctorate, and those who are interested in becoming professors of educational administration should be provided the opportunity to participate in the internship instead of the dissertation and follow this track to the doctorate. The program for those taking the internship could be planned so that adequate experiences could be obtained in research techniques. Such a program would enable those interested in the research track to receive greater guidance and supervision. Such a program could possibly provide greater aid in material resources, as well as supervision which could result in the development of higher quality research in educational administration.[13]

Brantner's[14] study was concerned with determining whether the vocational trade and industrial shop teacher education in Pennsylvania provides for professional competency. He found 180 items of knowledges and abilities to be valid and reliable in determining competencies necessary in preparatory teacher education. He recommended that further research be made to overcome such problems that findings and inferences of his study had brought forth. One of these was to determine what additional knowledges and abilities should be taught as a part of in-service education.

Larson had this to say about the inadequacy of facilities for teacher education:

> As a result of the lack of adequate facilities for updating vocational-technical in-service educators (and for strengthening pre-service and graduate school students

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[13] Ibid., pp. 131-132.

[14] Seymour T. Brantner, "An Appraisal of Selected Courses of the Vocational Trade and Industrial Teacher Education Curriculum in Pennsylvania" (unpublished Ed. D. dissertation, University of Pittsburgh, 1962), pp. 145-148.

> as well), most colleges and universities offer teacher education courses mainly classified as "methods" courses. While these are important, and need to be part of pre-service and in-service education, they are not designed to, nor do they, provide the essential upgrading in "subject matter" concerned with new innovations in technology.[15]

One of Larson's[16] objectives was to develop the educational specifications for a "model" center. His highly informative study should have definite results in the next few years because of widespread dissemination of a necessary study.

Kishkunas[17] submitted a proposal to the State Director of Vocational Education in Pennsylvania in 1965 which brought many challenges and problems, particularly in matters relating to financing, staffing and facilities. The proposal was authorized to concern itself with facility needs, transcending traditional facility requirements with new evolving conceptions. The report was divided into seven divisions for technical discussions of problems and their solutions. They were: (1) Introduction, (2) Flexibility Through Modularity, (3) Space Determinations, (4) Schematic Modernization, (5) A Planner's Guide to the Pittsburgh Building Code, (6) Additional Information, and (7) Appendix.

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[15] Milton E. Larson, A Vocational-Technical Teacher Technology Center--The Development of a Model, A Report of Project Number OE-5-85-043 Supported by the United States Office of Education Under the Vocational Education Act of 1963, Section 4(c)(New Brunswick: Rutgers--The State University, 1966), pp. 2-3.

[16] Ibid., pp. 4-5

[17] Kishkunas, Louis J., A Comprehensive Concept for Vocational Education Facilities, A Report of Project Number 16003 Supported by the Bureau of Technical and Continuing Education of the Pennsylvania Department of Public Education and the Pittsburgh Board of Public Education. (Harrisburg: Department of Public Instruction, 1965), pp. 2-3.

Valuable information for the determination of factor items for this study's instruments were obtained from that report. At the same time the above study was undertaken there were other studies of similar nature going on in Pennsylvania. One of the studies[18] of note for consideration was the efforts by a State-wide committee who worked almost a whole year to complete a study on School Building Standards. Most interesting and worthwhile were the areas of consideration which also proved valuable for this writer's study. These areas included: (1) Long-Range Planning, (2) Selecting and Developing School Sites, (3) Educational Specifications, (4) The School Plant Guide, (5) Area Vocational Technical Schools, (6) Community Colleges, and (7) Economics in School Construction. Here again was a study that furnished this writer with many pertinent and valuable items of consideration.

The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University brought together national leaders in Trade and Industry teacher education to focus attention on the generation of guidelines for research and development programs to expand and improve Trade and Industry teacher education in the Spring of 1966. Although the presenters of papers were focusing on pertinent subject matter which deals with this study only a few references will be given. Hankin's[19] investigation sought to identify and assemble in bibliographic form the textbooks, reference books, and other published material relevant to instructional procedures used in trade and industrial teacher education. In the same manner this writer has attempted to put into bibliographical form publications related to the developed competencies in the instruments used for this study. This suggested related material can be found under the heading: Suggested Reference Materials.

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[18] State Board of Education, Report of the Advisory Committee on School Building Standards, A Report prepared by the Advisory Committee on School Building Standards (Harrisburg: State Board of Education, 1965), pp. 9-121.

McMahon,[20] in his paper, presented some provocative statements about the state of literature specifically prepared for our field and adequate to sustain our pretentions to being a unique area in the broad field of education. He says our greatest failure has been in the area of producing such a body of literature. It is this writer's contention that specifically prepared literature for use in other education fields can be of great value to those of us in Trade and Industrial Education and this literature should be investigated and used more than it is. The use of this literature can enhance but not endanger our so-called cherished beliefs.

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[19] Edward H. Hankin, "Analysis of Trade and Industrial Teacher Education Professional Literature: Instructional Methods, Instructional Aids, Test Construction, Shop Management and Safety," Report of a National Invitational Research Planning Conference on Trade and Industrial Teacher Education, The Center for Vocational and Technical Education (Columbus: Ohio State University, 1966), pp. 31-62.

[20] Gordon G. McMahon, "Analysis of Trade and Industrial Teacher Education Professional Literature: History and Philosophy, Shop Planning, and Industrial and Public Relations," Report of a National Invitational Research Planning Conference on Trade and Industrial Teacher Education, The Center for Vocational and Technical Education (Columbus: Ohio State University, 1966), pp. 73-83.

Larson's[21] presentation of a paper on Facilities Planning for Technical Programs ties together the main ingredients needed for effective vocational-technical education. They are facilities planning, the program, the needs of students, and the needs of the faculty and the community. His outlined steps from initial idea to the finished product contain all elements necessary to do the job. It is the opinion of this writer that to get knowledgeable educators to play these many and varied roles is a task that is not unsurmountable but, at this time, very formidable.

Professional Books

This writer found in his investigation of published materials that the area of books that were up-to-date furnished the largest selection for the gathering of information. It was also found that certain organizations were in the process or had already expended many millions of dollars to help American schools and colleges with their physical problems by the encouragement of research and experimentation and the dissemination of knowledge regarding educational facilities.

Organizations that have contributed greatly to education as sources of information, especially in facilities, are the American Association of Junior Colleges, Stanford University's Community College Planning Center, The United States Office of Education's Educational Research Information Centers, the University of Wisconsin's

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[21] Milton E. Larson, "Facilities Planning for Technical Education Programs," Compilation of Technical Education Instructional Materials--Supplement 1, New and Revised Informational Resources, The Center for Vocational and Technical Education (Columbus: Ohio State University, 1966), pp. 109-148.

University Facilities Research Center, and the University of Michigan's Society for College and University Planning.

Another source of valuable information was gained for this study by the writer when he interviewed the State Director of Technical and Industrial Education, Robert Jacoby. Jacoby offered to allow this writer to inspect all informative material gathered by his departmental staff. The wealth of information gathered and the material published through the Department of Public Instruction made this writer aware that many States' Vocational-Technical Education departments have similar informative materials.

Jacoby[22] has presented to vocational educators a guide to design, planning equipping, and financing area vocational-technical school facilities. Jacoby[23] also presented guidelines and procedures for those involved in making surveys.

Another valuable contribution to this study, from the source of professional books, was the references to other sources of information. Virtually every author of professional books has also written several articles which were found in periodicals.

Those professional books which contributed most directly to this study in methods of research, statistical procedures, and thesis writing are here listed:

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[22] Robert Jacoby, and others, Vocational-Industrial-Technical Education Building Facilities (Harrisburg: Department of Public Instruction, 1967).

[23] Robert Jacoby, and others, Trade and Technical Surveys--Techniques, Forms, Procedures (Harrisburg: Department of Public Instruction, 1961).

Methods of Research[24]

Introduction to Applied Statistics[25]

Statistics, An Intuitive Approach[26]

Form and Style in Thesis Writing[27]

Periodicals

A review of periodical literature provided a most valuable cource of information for this study, especially that periodical literature written since 1960. Prior to that time the available literature showed little promise of the innovation that we find today.

Most of the periodical literature that provided the major amount of information dealing with school facilities, shop and laboratory layout, media equipment and materials, surveys, long-range planning, educational specifications, and school building consultants came from these periodical publications:

Progressive Architecure

Architectural Record

American Institute of Architects Journal

American Vocational Journal

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[24] Carter V. Good and Douglas E. Scates, Methods of Research (New York: Appleton-Century-Crofts, Inc., 1954).

[25] John G. Peatman, Introduction to Applied Statistics (New York: Harper and Row, Publishers, 1963).

[26] George H. Weinberg and John A. Schumaker, Statistics, An Intuitive Approach (Belmont: Wadsworth Publishing Company, Fifth Printing, 1966).

[27] William Giles Campbell, Form and Style in Thesis Writing (Boston: Houghton Mifflin Company, 1967).

Industrial Arts and Vocational Education

School Shop

The State of New York has a mammoth construction program being carried on by the State University of New York, the State University Construction Fund, and the Dormitory Authority of the State of New York. The program's manager has this to say about "total professional service":

> The University's master plan has developed and established the educational objective of the entire expansion program through the decade of the 60's. In response to the demands of this master plan, it was determined that effective and comprehensive long-range planning would be the essential foundation for orderly campus expansion. . . . there was developing a concomittant demand for better educational programming, in terms of curriculum offering and the quality of faculties and facilities available to meet expected demands. . . .
>
> As statements of performance, they give architects and their consultants the required flexibility to design facilities to meet time, quality and cost objectives. This project represents a serious commitment by the Fund to the development of a language which will result in a stronger link between educator and architect. . . .[28]

Anderson suggests that we are presently involved in educational reform and this reform has many architectural implications. He says:

> We are presently in a decade of unprecedented reform in public school organization patterns, this reform in turn both causing and deriving from efforts at fundamental changes in the school program and in procedures of instruction. The essence of these reforms is a rededication to the concept of individualized instruction. A major effort of these reforms is to inspire teachers to work more closely together, to complement each other's academic interests and commitments in many ways, and to confront children

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[28] Anthony G. Adinolfi, "How a State University Creatively exploits Total Professional Service," A.I.A. Journal, XLII (June, 1965), 61-66.

> in instructional groups of many patterns. All of these changed have direct and significant implications for architecture, the pasword being flexibility.[29]

Maley discusses the potential for occupational exploration of the cluster concept, as used in work being studied in the Industrial Education Department at the University of Maryland. He cites well known statements of leading vocational educators, identifies particular clusters, and ends his report with a basic premise which reads:

> The cluster program has as a basic premise the importance of enhancing the individual's potential employability by virtue of a wider range of entrance skills and a level of articulation across several occupational areas.[30]

Cochran[31] tells us of a study illustrating the degree of effectiveness that can be achieved in utilizing programmed instruction. In summary the study produced results showing that it could be a most valuable tool for the teacher in vocational education.

Other Literature

The review of literature included a search for information from bulletins, committee reports, and other written material. Information gathered concerning criteria and procedures to be used for establishing, maintaining, and evaluating vocational programs, especially in the area of building facilities, has provided for this writer an insight of a great amount of material in existence that is up-to-date, relevant, and reliable.

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[29] Robert Anderson, "Educational Reforms and Its Architectural Implications," Progressive Architecture, XLVI (August, 1965), 132.

[30] Donald Maley, "The Cluster Concept: Chance for Occupational Exploration," American Vocational Journal, XLII (October, 1967), 22-23.

[31] Leslie H. Cochran, "Action Research: Programmed Instruction in Industrial Education," American Vocational Journal, XLIII (May, 1968), 30-31

Although informative materials in the past decade grew large a problem arose in information retrieval, storage, and dissemination of such materials. The U. S. Office of Education, Department of Health, Education and Welfare sponsored centers around the nation for the above mentioned problem elimination. One such center, The Center for Vocational and Technical Education, was established as an independent unit on the Ohio State University campus. The major objectives of the center have been, and will continue to be a valuable resource center for upgrading Vocational-Technical Education.

Reynolds[32] has designed an instrument for evaluation of vocational and technical programs which includes a section on school plant facilities.

The State Department of Education in Ohio[33] has written a manual of policies, practices and standards that include facilities.

The Division of Educational Facilities Planning Reference Material[34] for the State of New York has developed a guide to administrative procedures which is comprehensive and new. It also gives out information, to those interested, for other publications in the same area. Publications are distributed to all interested educators.

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[32] Harris W. Reynolds, and others, Evaluative Criteria for Vocational Technical Programs (Harrisburg: Department of Public Instruction, 1967).

[33] Ohio Trade and Industrial Education Service, Manual of Operation (Columbus: Department of Education/Division of Vocational Education, Revised, 1966).

[34] The University of the State of New York, School Building Projects: A Guide to Administrative Procedures (Albany: The State Education Department, 1966).

The State Board for Vocational Education[35] developed a guide designed to assist those public schools in planning, establishing, conducting, and evaluating programs in vocational education. In the introduction they say: "If the philosophy of vocational education is to function effectively, qualified instructors and adequate facilities must be provided."

Another guide for planning and developing vocational education programs was designed in the State of Oregon.[36] The same basic principle and objectives of vocational education remain constant in the various states, but composition of administrative structure differs. These differences do not materially affect vocational programs.

A few years ago the King County Planning Department of the State of Washington[37] in cooperation with the Washington State Department of Commerce and Economic Development drew up a plan for the development of goals and standards. This short-range plan was the forerunner in that State of a long-range plan which is now in the implementation stage.

An article written by Selden[38] was informative in an area that is new to education on levels other than higher education. He asked some pertinent questions about relationship between teachers and teacher aids in respect to a boss-worker on a collegial and cooperative partnership and gave some advice on correction of such existing situations.

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[35] State Board for Vocational Education, Policies and Procedures Governing the Operation of Vocational-Technical Education in Nevada (Carson City: Department of Education, Revised 1967), p. 1

[36] State Board of Education, Guide for Organization and Administration of Vocational Education Programs in Secondary Schools (Salem: State Department of Education, 1966)

[37] King County Planning Department, A Plan for the Development of Community in Junior Colleges in School Districts in King County (Seattle: King County Superintendents Office), April, 1961. (Mimeographed)

[38] Dave Selden, "Teachers and Teachers' Aides: Developing a Partnership," American Teacher, LII (June, 1968), 10.

In addition to those studies and reports which have been cited it was found that many other states, acutely aware of the need, are conducting similar studies pertinent to the planning of facilities and developing criteria for selection of those specialists needed for this work.

CHAPTER II

TECHNICAL TREATMENT

I. INTRODUCTION

A report of the procedures followed and the methods employed in the development and subsequent evaluation of the two separate instruments designed to fulfill the purpose of this study is presented in this chapter. The purpose was: (1) to develop criteria for the selection of a vocational plant facilities specialist, (2) to develop criteria for the selection of those assistants to a vocational plant facilities specialist, (3) to develop instruments which would be of use in the selection process, and (4) to develop a selected bibliography of informative literature that would be of use for those responsible in the planning, implementation, and evaluation of vocational plant facilities.

The plan for this study called for the development of criteria which could also be used as instrument items. Therefore, the development of criteria for the selection of a specialist and his assistants is reported in this chapter as the establishment of instrument items. Described first is the development of a list of factors which were considered for use as instrument items, proposed criteria, and developing a selected bibliography. The discussion then proceeds to the development of the opinionnaires which were used for submitting those factors to a jury of experts for validation.

After the validation procedure had been completed, attention was then given to further developing and refining the items for submission to the selected population. The opinionnaires were then mailed to the respondents. This provided an opportunity to secure data for use in determining the validity and reliability of the newly developed instruments.

II. ESTABLISHMENT OF INSTRUMENT ITEMS

The establishment of instrument items began initially with development of an all inclusive but informal list of factors reported or known to be of importance to those concerned with planning school facilities. The factors used were found in the literature reviewed, from past experiences of the writer, and from others which were reported during interviews with persons experienced in the development of vocational education programs. The extended list of factors was then examined for the purpose of eliminating duplications. The list was subdivided because the competencies necessary of persons for the overall planning of facilities and the competencies necessary for a specific part of the planning of facilities varied in degree of knowledge and ability. Some factors were classified as being necessary for both instruments, while other factors were classified as being necessary to one or the other instrument.

Treatment of Factor Items

A preliminary list of factors in each instrument was prepared and submitted to vocational teacher educators for examination of the list of knowledges and abilities, for clarity of expression, and the addition or deletion according to their opinion. Many valuable suggestions were given by this group.

The preliminary list of factors was then revised for each instrument and the items were distributed randomly for a final set of instruments (Appendix A).

It was felt by this writer that a possibility of bias might be introduced into the instruments by allowing the initial items to be grouped in categories instead of standing independent. Therefore a random selection process was used.

Each item factor was divided into four possible levels of values for determination by the jury. The divisions were listed as: (1) Great Value, (2) Real Value, (3) Little Value, and (4) No Value.

Validation of Factor Items

Before proceeding further with the establishment of instrument items, it was considered essential that a determination be made as to the validity of the two lists of factor items which had been developed. The two lists were submitted to a jury of experts for critical analysis.

The questionnaire (Appendix A) was given to a carefully selected group of persons having experience in the development of vocational education programs. The purposes of the questionnaire were: (1) to determine to what extent the prepared lists were considered to be of falue, and (2) to learn of other factors which were considered to be important. The jury members were directed to evaluate the particular item of knowledge or ability by check marks in the column they judged to be the appropriate column. Following the listing of the knowledges and abilities, space was provided for the respondents to add any additional knowledges or abilities that they felt should be included or for any comments they wished to make. (See Appendix H)

III. TREATMENT OF DATA FROM JURY

The usefulness of the initial instruments depended upon the validity which the expertise of the jury verified by their review of the items. The final instruments were prepared on the basis of their responses to the initial instruments.

The reliability of the instruments was verified by the statistical processes, the results which are found on page 38.

Validity was obtained by: (1) analyzing thoroughly and critically the related researches for a plant facilities specialist and his assistants activities, abilities, and knowledges proven to be essential, (2) reconstructing the initial instruments from the knowledges and abilities known to be essential by previous research and verified as included in the teacher education curriculum in teacher training institutions, and (3) asking the jury of experts to check the initial instrument items on the basis of their intimate and expert knowledge of such factors. The assumption that the persons best qualified to formulate attitudes about the applications of professional competencies to plant facilities specialists activities and their assistants activities are those who have applied them to a great degree in the past. Therefore, the validity of this study depended upon this previously verified premise.

It was decided to establish a weighed mean for each item of the instruments by attaching an arbitrary value to each response before establishing validity. The use of such a method appears justified in dealing with data of this nature. As stated by Garrett:

> It has been shown that σ scaling yields are little if any more reliable or more discriminating than the results

> obtained when the five answers are scored simply 1, 2, 3, 4, and 5. This virtual equality of scaling and rule-of-thumb method is a rather familiar finding in mental measurement.[40]

The mean for each item was computed by multiplying the number of checks in the "Great Value" column by four, those in "Real Value" column by three, those in "Little Value" column by two, and those in the "No Value" column by one. The results were added together and divided by the number of checks for that particular item to obtain the weighted mean. A rank order was then determined on the basis of these average ratings of desirability. Items ranging 3.50 and above were listed as "Great Value", items ranging from 2.50 to 3.49 were listed as "Real Value", items ranging from 1.50 to 2.49 were listed as "Little Value", and items ranging from 1.49 or less were listed as "No Value".

IV. NATURE OF VALIDATING JURY

Ten persons with experience in the development of vocational education programs were selected to serve on the validating jury. This group included four State Coordinators and six vocational teacher educators located at The Pennsylvania State University. From the ten persons selected, all ten actually participated in the validation procedure. The names, positions and addresses of persons who served as the jury of experts appear in Appendix B.

V. DETERMINATION OF FINAL INSTRUMENT ITEMS

A tabulation of the jury responses, shown in Appendix E revealed that each of the suggested factors was judged to be important by a majority of the jury membership. Although it appeared from an analysis of the data that some factors might be more important than others, there was insufficient justification for declaring any one of them invalid.

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[40] H. E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1947), p. 321.

From a review of comments made by jury members it appeared that possibly some of the factor items (Part A) of the questionnaire would have been considered of more value by a greater number of jurors if the particular factor items were to have been reworded. Although unable to declare such reworded factors valid, it was decided that an indication of their validity could be secured from the questionnaire procedure which was to follow.

VI. REFINEMENT OF INSTRUMENTS

The instruments developed (Part A and Part B) for use in selection of plant facilities specialists and their assistants appear in Appendix C. On instrument (Part A) were forty-three items to be checked by the respondent. For each of the forty-three items there were five responses which were found to be descriptive of levels of agreement: (1) Strongly Agree, (2) Agree, (3) Neutral, (4) Disagree, and (5) Strongly Disagree. On instrument (Part B) were seventy-one items to be checked by the respondent. For each of the seventy-one there were five responses which were found to be descriptive of levels of agreement: (1) Strongly Agree, (2) Agree, (3) Neutral, (4) Disagree, and (5) Strongly Disagree.

The final instruments (Part A and Part B) were designed so that they could be printed on 8-1/2" x 11" sheets of paper. This provided four pages of items in Part A and seven pages for items in Part B.

Each instrument in its final form included definitions, instructions, and space for recording relevant additional data.

VII. APPLICATION OF INSTRUMENTS

The names and addresses of all vocational technical and industrial education administrators, full-time teachers, and part-time teachers in the central region of Pennsylvania were obtained from the area coordinators of the same region.

Many investigators, when making surveys, send out an initial letter of request asking for cooperation in the study and a return postal card on which they could indicate their willingness to participate in such a survey. This writer felt that he could obtain good results without the use of an initial request. Because of earlier personal contact with the study population prior to the study, it was felt that sufficient interest was present in the problem that a high percentage of returns was assured.

A transmittal letter was prepared (Appendix C). The directions for marking the research instrument were presented on the front page of the opinionnaire. These instruments, their accompaning transmittal letters, and a stamped return envelope were mailed the week of May 5, 1968. On June 5, 1968 a follow-up letter (Appendix F) was mailed to each person who had not yet returned the opinionnaire. The distribution of the opinionnaire and the replies received from three types of respondents of the central region of the Commonwealth of Pennsylvania are shown in Table I.

TABLE I

DISTRIBUTION OF THE OPINIONNAIRES AND THE NUMBER AND PER CENT OF REPLIES RECEIVED

GROUP	Number Lists Mailed	Number Lists Returned	Per Cent Lists Returned
Vocational Administrators	40	33	83
Vocational Full-time Teachers	211	122	58
Vocational Part-time Teachers	74	27	37
Totals	325	182	57

Four opinionnaires were returned unopened with a notation on each letter that the individual had left such employment. These opinionnaires were not tabulated in Table I.

VIII. TABULATING THE DATA

The datum from the individual instruments was tabulated and compiled on 17" by 22" work sheets. Separate sheets were designed for the data from each of the three groups of respondents. The tabulated check marks were counted and the totals, with their corresponding percentage figures, were transferred to final table form. These data appear in Chapter III and in the Appendixes.

IX. TREATMENT OF THE DATA FROM THE POPULATION

The usefulness of the final instruments depended upon the validity which the expertise of the jury verified by their review of the items. The reliability of the instruments was verified by the statistical processes, the results which are found on page 38.

Validity was obtained by: (1) asking the study population to check the instrument item factors on the basis of their intimate and expert knowledge of such factors, and (2) constructing the final instrument from the knowledges and abilities known to be essential by the jury of experts. The assumption that the persons best able to formulate attitudes about the application of professional competencies to plant facilities specialists activities and their assistants activities are those who have applied them to some degree, and those who supervise these persons. Therefore, the validity of this study depended upon this previously verified premise.

It was decided to establish a weighted mean for each item of the instruments by attaching an arbitrary value to each response before establishing reliability in the same manner shown on page 38. The mean for each item was computed by multiplying the number of checks in the "Strongly Agree" column by five, those in the "Agree" column by four, those in the "Neutral" column by three, those in the "Disagree" column by two, and those in "Strongly Disagree" column by one. The results were added together and divided by the number of checks for that particular item to obtain the weighted mean. A rank order was then determined on the basis of these average ratings of desirability. Items ranging 4.50 and above were listed as "Strongly Agree". Items ranging from 3.50 to 4.49 were listed as "Agree". Items ranging from 2.50 to 3.49 were listed as "Neutral". Items ranging from 1.50 to 2.49 were listed as "Disagree", and items ranging from 1.49 and less were listed as "Strongly Disagree". This computation procedure was repeated for the three groups: the administrators, the full-time teachers, and the part-time teachers.

A composite rank order was established to indicate the relative importance placed by all respondent groups on each item.

The reliability of the final instruments were established in this way: the reliability of the attitudes was obtained by correlating, by Pearson product-moment coefficient correlation the returns of the even number respondents in each separate group with those of the corresponding odd numbered respondents in each separate group. The correlation coefficient from all five attitudes (Part A) expressed by the local administrators was 65 per cent, by the full-time teachers was 94 per cent, by the part-time teachers was 72 per cent, and the jury was 64 per cent. The manner of obtaining a measure of reliability for (Part B) of the instrument was accomplished by using the same procedure as stated above. The correlation coefficient of the local administrators was 75 per cent and the jury was 44 per cent. The reliability of the attitudes expressed by the various groups is given in Chapter III.

X. NATURE OF THE POPULATION

Schools representing all levels of industrial education in vocational-technical education in the central region of the Commonwealth of Pennsylvania participated in this study. Table I shows representation by number and per cent of those educators in each group contacted as well as the number and per cent of those educators in each group choosing to participate in this study. The table

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[41] George H. Weinberg and John A. Schumaker, Statistics: An Intuitive Approach (Belmont: Wadsworth Publishing Company, 1962), p. 264.

indicates the philosophy and practice of the majority of vocational educators in this area towards participation in such a study and are representative of this population.

Brantner[42] in his study of trade and industrial teacher e educators curriculum found that the median of teaching experience for the teacher was between 10 and 14 years and the median of experiences for the administrators was between 20 and 24 years. Hence, it can be assumed that the study population does possess the ability and knowledge in providing pertinent data required for this study.

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[42] Seymour T. Brantner, "An Appraisal of Selected Courses of the Vocational Trade and Industrial Teacher Education Curriculum in Pennsylvania" (unpublished Doctor's thesis, The University of Pittsburgh, Pittsburgh, 1964), p. 28.

CHAPTER III

ANALYSIS AND INTERPRETATION OF DATA

I. INTRODUCTION

The purpose of this study, as stated in Chapter I, was: (1) to develop criteria for the selection of a vocational plant facilities specialist, (2) to develop criteria for the selection of those assistants to a vocational plant facilities specialist, (3) to develop instruments which would be of use for the selection process, and (4) to develop a selected bibliography of informative literature that would be of use for those responsible in the planning, implementation, and evaluation of vocational plant facilities. It was also stated that one of the subordinate problems was to determine validity and reliability of instruments developed.

The determination of the above mentioned subordinate problem was based upon the actual use of the instruments by a population composed of these administrators, full-time teachers, and part-time teachers of Vocational Trade and Industrial programs in the central region of Pennsylvania. Results obtained from applications of the instruments are the data presented in this chapter. The discussion which follows is concerned with analysis and interpretation of those data with specific reference to instruments' validity and reliability.

II. ANALYSIS OF APPRAISAL OF COMPETENCIES (PART A) BY FULL-TIME TEACHERS

After the instruments (Appendix D) had been developed they were applied to the vocational full-time teachers, as explained in Chapter II. The respondents were instructed to check each item as to their evaluation of the level of importance. Appendix F shows the total of checks indicated by the respondents under each of the points of the scale of importance. Rank orders were determined by calculating the weighted means for each item and arranging these in the ranking of one to forty-three. The rank order is presented in Table II.

The opinions of the employed full-time teachers seem to indicate the list is a valid one, for they tended to place high agreement on a large proportion of the items. From the entire list of forty-three items, six were rated as "strongly agree" and thirty-two as "agree". Although competence categories were listed in the definition of terms in Chapter I it was found that many items listed fell into more than one category so an attempt to classify by category was not made.

Superficial examination by this writer of the data in Part A of the opinionnaire also showed it to be unnecessary to put items into categories because it was felt that by doing so would not have contributed materially to the study. A meticulous inspection of the items and rankings in Table II will prove valuable to those concerned with competencies needed by assistants to plant facilities specialists.

It was also interesting to note that the full-time teachers scores produced the highest reliability of any group (94 per cent) within the study population. This showed a high degree of consistency between item scores and total scores. To the degree that the

TABLE II

RELATIVE IMPORTANCE WHICH FULL-TIME TEACHERS OF TRADE AND INDUSTRIAL SUBJECTS PLACED ON A LIST OF COMPETENCIES (PART A)

Competencies	Rank Order of Importance
Competencies Rated "Strongly Agree"	
should consider all the aspects of safety as an integral part of any program (39)[a]	1
should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry (40)	
must be able to use catalogs, take expert advice, and order the proper equipment (20)	3
believe that facilities, equipment, and supplies for teacher preparation of audio-visual aids should be considered when planning for plant facilities by the administration (1)	4
should be provided materials for demonstration purposes as a part of planning shop or laboratory needs (22)	5
should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable (36)	6
Competencies Rated "Agree"	
know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area (26)	7
must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process (38)	8
should be able to justify all new equipment (5)	9
must understand long-range planning (11)	10
must be able to determine quantities of equipment and supplies needed to meet all demands in an area (28)	11
would recognize that planning plant facilities without educational specifications should not be attempted (37)	12

[a] Item number from instrument (Part A).

TABLE II (continued)

Competencies	Rank Order of Importance
Competencies Rated "Agree"	
feel that teachers who work together in organizing courses for inter-relationship when developing educational specifications will upgrade competencies (25)	13
believe that teachers must plan together, rather than individually, in developing education specifications those media materials that will be needed in their programs (15)	14
am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process (21)	15
should shoulder the major part of the responsibility in shop or laboratory layout and design (35)	16
must continue to upgrade competence levels by adding competencies necessary when helping determine new plant facilities planning (10)	17
would recognize the value of having offices for teachers (19)	18
feel that some short courses, or clinics, or workshops would be needed for learning procedures in carrying out responsibilities of assisting in developing educational specifications (34)	19
can keep abreast of change regarding the planning of educational plant facilities by means of summer employment, or in-service teacher training, or attendance at professional association meetings, or in a study of pertinent literature (4)	20
would recognize the value of having an instructional planning center within the over-all educational facilities (32)	21
would be able to assist an experienced facilities specialist to develop educational specifications (33)	22
feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities (18).	23

TABLE II (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
believe that any media used in publicizing a building program is a must (3)	24
must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning (43)	25
know that if a shop or laboratory has been well planned there will be little tool and equipment loss (9)	26
feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications (14)	27
should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility (6)	28
feel that all organizations and community groups should participate in a community-school relationship (13)	29
would prefer to have an individualized building preparation center for producing audio-visual materials (41)	30
am of the opinion that a committee type organization is needed for assistance in developing my specific part of educational specifications (12)	31
see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study (23)	32
must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements (31)	33
must have the best possible help of experts in my area of responsibility for preparing educational specifications (30)	34
would like to have a media specialist on the staff for assistance and guidance when planning educational specifications in my area (7)	35

TABLE II (continued)

Competencies	Rank Order of Importance
Competencies Rated "Agree"	
feel that a source of assistance to a teacher preparing a part of educational specifications can come from competent students (29)	36
am able to keep abreast of the latest information by gathering pertinent literature on plant facilities (27)	37
feel that in accepting the new concepts of learning and to effectively use the techniques of new media when designing educational specifications I would need more teacher education (42)	38
Competencies Rated "Neutral" (39-43)	
think that courses, using team teaching methods, would require a new type educational facility (2)	39
feel that the collegial method approach in teacher meetings for the developing of educational specifications would result in more effective educational specifications (24) . .	40
think labor unions representation have a share in planning vocational programs (16)	41
would need the help of an educational facilities planning specialist when preparing those educational specifications pertinent to my program (8)	42
feel that in developing that part of educational specifications which is concerned with media materials that purchasing ready-made media materials will not be as effective as teacher-made media materials (17)	43
Competencies Rated "Disagree" and "Strongly Disagree" (None)	

instrument is valid, the analysis of data indicated that each of the forty-three items was a useful and a valid instrument item.

III. ANALYSIS OF APPRAISAL OF COMPETENCIES (PART A) BY PART-TIME TEACHERS

The same instrument as applied to the full-time teachers was used and the method used for weighting was the same for the part-time teachers. Appendix E shows the totals of checks by the respondents under each of the points of the scale of importance. Rank orders were obtained using the same method as used for full-time teachers. Rank order for the part-time teacher is presented in Table III.

The opinions of the successful part-time teachers seem to indicate the list was a valid one for they also tended to place high agreement on a large proportion of the items. From the entire list of competencies, four were rated "strongly agree" and thirty-one items were rated "agree".

As was found in a cursory examination of Table II, Table III showed it to be unnecessary to put items into categories. The part-time teachers scores produced the next highest reliability (72 per cent) with the study population. This also showed a high degree of consistency between item scores and total scores. To the degree that this instrument is valid, the analysis of data indicated that each of the items was useful and a valid instrument item. A close review of all ratings and items will produce significantly similar results as found in Table II.

TABLE III

RELATIVE IMPORTANCE WHICH PART-TIME TEACHERS OF TRADE AND INDUSTRIAL SUBJECTS PLACED ON A LIST OF COMPETENCIES (PART A)

Competencies	Rank Order of Importance
Competencies Rated "Strongly Agree"	
should consider all the aspects of safety as an integral part of any program (39)[a]	1
should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry (40)	2
should be provided materials for demonstration purposes as a part of planning shop or laboratory needs (22)	3
believe that facilities, equipment, and supplies for teacher preparation of audio-visual aids should be considered when planning for plant facilities by the administration (1)	4
Competencies Rated "Agree"	
must be able to use catalogs, take expert advice and order the proper equipment (20)	5
know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area (26)	6
know that if a shop or laboratory has been well planned there will be little tool and equipment loss (9)	7
must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process (38)	8
should be able to justify all new equipment (5)	9
feel that teachers who work together in organizing courses for inter-relationship when developing educational specifications will upgrade competencies (25)	10
should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable (36)	11

[a] Item number from instrument (Part A).

TABLE III (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
must be able to determine quantities of equipment and supplies needed to meet all demands in an area (28)	12
must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements (31)	13
must understand long-range planning (11)	14
would recognize that planning plant facilities without educational specifications should not be attempted (37) . .	15
am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process (21)	16
see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study (23)	17
believe that teachers must plan together, rather than individually, in developing education specifications those media materials that will be needed in their programs (15)	18
think that courses, using team teaching methods, would require a new type educational facility (2)	19
can keep abreast of change regarding the planning of educational plant facilities by means of summer employment, or in-service teacher training, or attendance at professional association meetings, or in a study of pertinent literature (4)	20
would recognize the value of having an instructional planning center within the over-all educational facilities (32)	21
feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications (14) . . .	22
feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities (18). .	23

TABLE III (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
feel that some short courses, or clinics, or workshops would be needed for learning procedures in carrying out responsibilities of assisting in developing educational specifications (34)	24
would recognize the value of having offices for teachers (19)	25
must continue to upgrade competence levels by adding competencies necessary when helping determine new plant facilities planning (10)	26
must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning (43)	27
should shoulder the major part of the responsibility in shop or laboratory layout and design (35)	28
must have the best possible help of experts in my area of responsibility for preparing educational specifications (30)	29
would prefer to have an individualized building preparation center for producing audio-visual materials (41)	30
would be able to assist an experienced facilities specialist to develop educational specifications (33)	31
feel that in accepting the new concepts of learning and to effectively use the techniques of new media when designing educational specifications I would need more teacher education (42)	32
should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility (6)	33
think labor unions representation have a share in planning vocational programs (16)	34
feel that a source of assistance to a teacher preparing a part of educational specifications can come from competent students (29)	35

TABLE III (continued)

Competencies Competencies Rated "Neutral"	Rank Order of Importance
believe that any media used in publicizing a building program is a must (3)	36
am of the opinion that a committee type organization is needed for assistance in developing my specific part of educational specifications (12)	37
would like to have a media specialist on the staff for assistance and guidance when planning educational specifications in my area (7)	38
feel that the collegial method approach in teacher meetings for the developing of educational specifications would result in more effective educational specifications (24). .	39
am able to keep abreast of the latest information by gathering pertinent literature on plant facilities (27) . .	40
feel that all organizations and community groups should participate in a community-school relationship (13)	41
would need the help of an educational facilities planning specialist when preparing those educational specifications pertinent to my program (8)	42
feel that in developing that part of educational specifications which is concerned with media materials that purchasing ready-made media materials will not be as effective as teacher-made media materials (17)	43
Competencies Rated "Disagree" and "Strongly Disagree" (None)	

IV. ANALYSIS OF APPRAISAL OF COMPETENCIES (PART A) BY LOCAL ADMINISTRATORS

Again, the same instrument, as was applied to the full-time teachers and part-time teachers, was used. The same method also used for weighting the items as was done previously. Appendix E shows the totals of checks by the respondents under each of the points of the scale of importance. Rank orders were obtained using the same methods as used previously. Rank order for the local administrators is presented in Table IV.

The opinions of the employed local administrators seems to indicate the list was a valid one, for they, just as the full-time and part-time teachers had indicated, tended to place high agreement on a large proportion of the items. From the entire list of competencies, six were rated "strongly agree" and twenty-nine items were listed "agree".

Examination of the gathered data from the part-time teachers and full-time teachers in Part A of the opinionnaire showed it to be unnecessary to put items into categories, because of questionable value to the study, this writer did not attempt to place the local administrators items into categories either. A close inspection of all items and rankings will prove useful to those concerned with special competencies needed by assistants to a plant facilities specialist.

Although the local administrators scores produced the lowest reliability of the three groups (75 per cent) within the study population, it was meaningful and significant. This showed a high degree of consistency between their item scores and the total scores. To the degree that the instrument is valid, the analysis of data

TABLE IV

RELATIVE IMPORTANCE WHICH LOCAL ADMINISTRATORS OF TRADE AND INDUSTRIAL PROGRAMS PLACED ON A LIST OF COMPETENCIES (PART A)

Competencies	Rank Order of Importance
Competencies Rated "Strongly Agree"	
believe that facilities, equipment, and supplies for teacher preparation of audio-visual aids should be considered when planning for plant facilities by the administration (1)[a]	1
should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry (40)	2
should be able to justify all new equipment (5)	3
should consider all the aspects of safety as an integral part of any program (39)	4
must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process (38)	5
know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area (26)	6
Competencies Rated "Agree"	
should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable (36)	7
must be able to use catalogs, take expert advice and order the proper equipment (20)	8
must understand long-range planning (11)	9
believe that teachers must plan together, rather than individually, in developing education specifications those media materials that will be needed in their programs (15)	10
see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study (23)	11

[a] Item number from instrument (Part A).

TABLE IV (continued)

Competencies	Rank Order of Importance
Competencies Rated "Agree"	
should be provided materials for demonstration purposes as a part of planning shop or laboratory needs (22)	12
must be able to determine quantities of equipment and supplies needed to meet all demands in an area (28)	13
would recognize the value of having an instructional planning center within the over-all educational facilities (32)	14
am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process (21)	15
believe that any media used in publicizing a building program is a must (3)	16
should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility (6)	17
would be able to assist an experienced facilities specialist to develop educational specifications (33)	18
must continue to upgrade competence levels by adding competencies necessary when helping determine new plant facilities planning (10)	19
feel that teachers who work together in organizing courses for inter-relationship when developing educational specifications will upgrade competencies (25)	20
would recognize that planning plant facilities without educational specifications should not be attempted (37)	21
feel that some short courses, or clinics, or workshops would be needed for learning procedures in carrying out responsibilities of assisting in developing educational specifications (34)	22
must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements (31)	23
must have the best possible help of experts in my area of responsibility for preparing educational specifications (30).	24

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TABLE IV (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
feel that all organizations and community groups should participate in a community-school relationship (13)	25
think labor unions representation have a share in planning vocational programs (16)	26
feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications (14)	27
can keep abreast of change regarding the planning of educational plant facilities by means of summer employment, or in-service teacher training, or attendance at professional association meetings, or in a study of pertinent literature (4)	28
should shoulder the major part of the responsibility in shop or laboratory layout and design (35)	29
am of the opinion that a committee type organization is needed for assistance in developing my specific part of educational specifications (12)	30
feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities (18). .	31
know that if a shop or laboratory has been well planned there will be little tool and equipment loss (9)	32
would like to have a media specialist on the staff for assistance and guidance when planning educational specifications in my area (7)	33
must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning (43)	34
would need the help of an educational facilities planning specialist when preparing those educational specifications pertinent to my program (8)	35

TABLE IV (continued)

Competencies Competencies Rated "Neutral"	Rank Order of Importance
think that courses, using team teaching methods, would require a new type educational facility (2)	36
am able to keep abreast of the latest information by gathering pertinent literature on plant facilities (27) . .	37
would prefer to have an individualized building preparation center for producing audio-visual materials (41)	38
feel that in accepting the new concepts of learning and to effectively use the techniques of new media when designing educational specifications I would need more teacher education (42)	39
would recognize the value of having offices for teachers (19)	40
feel that a source of assistance to a teacher preparing a part of educational specifications can come from competent students (29)	41
feel that the collegial method approach in teacher meetings for the developing of educational specifications would result in more effective educational specifications (24) . .	42
feel that in developing that part of educational specifications which is concerned with media materials that purchasing ready-made media materials will not be as effective as teacher-made media materials (17)	43
Competencies Rated "Disagree" and "Strongly Disagree" (None)	

indicated that each of the forty-three items was a useful and a valid instrument item.

V. COMPARISON OF APPRAISALS OF COMPETENCIES (PART A) BY FULL-TIME TEACHERS, PART-TIME TEACHERS, AND LOCAL ADMINISTRATORS

By comparing the rank order of importance between the local administrators, full-time teachers, and part-time teachers it was found that, although not in exact same order, most competence items were similarly ranked. Table V shows comparison rank orders.

Comparison of the rankings of all competence items by local administrators, full-time teachers, and part-time teachers shows significant correlation. There were found, however, six competence items that had considerable difference in ranking by the three groups. In three cases the lower rank was given by the full-time teachers. In two cases the lower rank was given by the local administrators, and in one case the lower rank was given by the part-time teacher. The differences are shown in Table VI.

VI. ANALYSIS OF APPRAISAL OF COMPETENCIES (PART B) BY LOCAL ADMINISTRATORS

After the instrument (Appendix C) had been developed it was submitted to the local administrators population, as explained in Chapter II. The respondents were instructed to check each item as to their evaluation of the level of importance. Appendix E shows the tabulation of total checks indicated by the respondents under each of the points of the scale of importance. Rank orders were determined by calculating the weighted means for each item and arranging them in the ranking of one to forty-three. The rank order is presented in

TABLE V

COMPARISONS OF RELATIVE IMPORTANCE OF COMPETENCIES (PART A) BETWEEN LOCAL ADMINISTRATORS, FULL-TIME TEACHERS, AND PART-TIME TEACHERS

Competencies	Rank Order of Importance		
	Full-time Teachers	Part-time Teachers	Local Administrators
should consider all the aspects of safety as an integral part of any program (39)[a]	1	1	4
should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry (40)	2	2	2
must be able to use catalogs, take expert advice, and order the proper equipment (20)	3	5	8
believe that facilities, equipment, and supplies for teacher preparation of audio-visual aids should be considered when planning for plant facilities by the administration (1)	4	4	1
should be provided materials for demonstration purposes as a part of planning shop or laboratory needs (22)	5	3	12
should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable (36)	6	11	7

[a] Item number from instrument (Part A).

TABLE V (continued)

Competencies	Rank Order of Importance Full-time Teachers	Part-time Teachers	Local Administrators
know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area (26)	7	6	6
must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process (38)	8	8	5
should be able to justify all new equipment (5)	9	9	3
must understand long-range planning (11)	10	14	9
must be able to determine quantities of equipment and supplies needed to meet all demands in an area (28)	11	12	13
would recognize that planning plant facilities without educational specifications should not be attempted (37)	12	15	21
feel that teachers who work together in organizing courses for inter-relationship when developing educational specifications will upgrade competencies (25)	13	10	20
believe that teachers must plan together, rather than individually, in developing education specifications those media materials that will be needed in their programs (15)	14	18	10
am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process (21)	15	16	15

TABLE V (continued)

Competencies	Rank Order of Importance		
	Full-time Teachers	Part-time Teachers	Local Administrators
should shoulder the major part of the responsibility in shop or laboratory layout and design (35)	16	28	29
must continue to upgrade competence levels by adding competencies necessary when helping determine new plant facilities planning (10)	17	26	19
would recognize the value of having offices for teachers (19)	18	25	40
feel that some short courses, or clinics, or workshops would be needed for learning procedures in carrying out responsibilities of assisting in developing educational specifications (34)	19	24	22
can keep abreast of change regarding the planning of educational plant facilities by means of summer employment, or in-service teacher training, or attendance at professional association meetings, or in a study of pertinent literature (4)	20	20	28
would recognize the value of having an instructional planning center within the over-all educational facilities (32)	21	21	14
would be able to assist an experienced facilities specialist to develop educational specifications (33)	22	31	18
feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities (18)	23	23	31

TABLE V (continued)

Competencies	Rank Order of Importance		
	Full-time Teachers	Part-time Teachers	Local Administrators
believe that any media used in publicizing a building program is a must (3).	24	36	16
must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning (43)	25	27	34
know that if a shop or laboratory has been well planned there will be little tool and equipment loss (9)	26	7	32
feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications (14)	27	22	27
should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility (6)	28	33	17
feel that all organizations and community groups should participate in a community-school relationship (13)	29	41	25
would prefer to have an individualized building preparation center for producing audio-visual materials (41)	30	30	38
am of the opinion that a committee type organization is needed for assistance in developing my specific part of educational specifications (12)	31	37	30
see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study (23)	32	17	11

TABLE V (continued)

Competencies	Rank Order of Importance Full-time Teachers	Part-time Teachers	Local Administrators
must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determing space requirements (31)	33	13	23
must have the best possible help of experts in my area of responsibility for preparing educational specifications (30)	34	29	24
would like to have a media specialist on the staff for assistance and guidance when planning educational specifications in my area (7)	35	38	33
feel that a source of assistance to a teacher preparing a part of educational specifications can come from competent students (29)	36	35	41
am able to keep abreast of the latest information by gathering pertinent literature on plant facilities (27)	37	40	37
feel that in accepting the new concepts of learning and to effectively use the techniques of new media when designing educational specifications I would need more teacher education (42)	38	32	39
think that courses, using team teaching methods, would require a new type educational facility (2)	39	19	36
feel that the collegial method approach in teacher meetings for the developing of educational specifications would result in more effective educational specifications (24)	40	39	42

TABLE V (continued)

Competencies	Rank Order of Importance		
	Full-time Teachers	Part-time Teachers	Local Administrators
think labor unions representation have a share in planning vocational programs (16)	41	34	26
would need the help of an educational facilities planning specialist when preparing those educational specifications pertinent to my program (8) . . .	42	42	35
feel that in developing that part of educational specifications which is concerned with media materials that purchasing ready-made media materials will not be as effective as teacher-made media materials (17)	43	43	43

TABLE VI

COMPETENCIES (PART A) IN WHICH RATINGS OF IMPORTANCE DIFFERED WIDELY BETWEEN FULL-TIME TEACHERS, PART-TIME TEACHERS, AND LOCAL ADMINISTRATORS

Competencies	Rank Order of Importance		
	Full-time Teachers	Part-time Teachers	Local Administrators
should shoulder the major part of the responsibility in shop or laboratory layout and design (35)	16	28	29
would recognize the value of having offices for teachers (19)	18	25	40
should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility (6)	28	33	17
see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study (23)	32	17	11
must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements (31)	33	13	23
think that courses, using team teaching methods, would require a new type educational facility (2)	39	19	36

Table VII in the same identical manner as shown in the previous tables.

The opinions of the local administrators indicated the list was a valid one, for they tended to place high agreement on a large proportion of the items. From the entire list of seventy-one items, ten items were rated "strongly agree" and fifty-seven items were rated "agree".

As was done previously in examining Part A, this writer gave a brief examination to Part B of the opinionnaire. He found that there was also a similar lack of need for putting items into categories because this would not have contributed materially to the study. A critical examination of the items and rankings in Table VII will produce valuable assistance to those concerned with special competencies needed by plant facilities specialists. To the degree that the instrument is valid, the analysis of data indicated that each of the seventy-one items was a useful and a valid instrument item.

TABLE VII

RELATIVE IMPORTANCE WHICH LOCAL ADMINISTRATORS OF TRADE AND INDUSTRIAL PROGRAMS PLACED ON A LIST OF COMPETENCIES (PART B)

Competencies	Rank Order of Importance
Competencies Rated "Strongly Agree"	
recognize my responsibility when developing plans for the maximum utilization and preservation of the building (19)[a]	1
would include shop areas as important (70)	2
am willing to spend the necessary time and effort to visit and inspect other similar school plants (13)	3
would include laboratory areas as important (6)	4
would include custodial services and maintenance operations as important (52)	5
must be able to justify the concept of having facilities and equipment conforming to industrial standards (35)	6
would recognize that the planning of facilities has to be accompanied by written educational specifications (9)	7
must use good public relations but more important must maintain a community level relations (11)	8
am of the opinion that school day and year can and should be extended to take advantage of existing facilities for more economy (7)	9
would include site selection and development as important (5)	10
Competencies Rated "Agree"	
must show the leadership abilities needed to secure the active cooperation of community, staff, and organizations (26)	11
am of the opinion that the educational specialist should have the necessary competencies when developing specifications to permit expansion with minimum modification in design and construction (14)	12

[a] Item number from instrument (Part B).

TABLE VII (continued)

Competencies	Rank Order of Importance
Competencies Rated "Agree"	
must be able to work closely with the architects, engineers, and contractors during the construction period (67)	13
am of the opinion that the architect selection process should contain the open selection method which determines the architects established reputation, demonstrated ability, and recommendations from previous clients (58)	14
would include rest-room facilities as important (29)	15
am of the opinion that criteria for site selection include size, site characteristics, cost, accessibility, environment, and regional planning (46)	16
am of the opinion that the environment of facilities can add or detract from the learning experiences of students (43)	17
must be able to utilize the advice and aid given from the experiences of staff, other schools, associations, state and federal offices when determining space requirements (36)	18
must know how to help choose a considerable variety of equipment needed for laboratory work in meeting educational objectives (68)	19
must favor and use to fullest advantage committee type organization made up of other educators, community groups, and other consultants (4)	20
would include general characteristics, food preparation center, dining area, and environmental aspects of food service as important (34)	21
agree that the use of educational specifications is necessary when planning school plant facilities (51)	22
would agree that education specifications would include identification data, educational philosophy of school and community, and school organization (16)	23
am of the opinion that the community resources can be considered as school facilities in which learning takes place (21)	24

TABLE VII (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
am of the opinion that teachers involved in some phase of educational specifications must have to develop and upgrade competencies in that area (10)	25
must know what competencies are needed by the individuals of various committees (17)	26
feel that in preparing educational specifications the time element involved should never be a deterrent to good planning (20)	27
must help choose a site for vocational facilities within reach of the people of a large area such as, but not necessarily, a county (27)	28
must have a thorough understanding of uses of the laboratories as a "proving ground" for the student to utilize his mathematical tools and confirm the theory of the science classroom (71)	29
am of the opinion that education specifications need to be developed to reflect new innovations and methods in the technologies of education, such as team teaching, educational television, computerized instruction, and instructional media (62)	30
am of the opinion that there is an expanding need for additional research on competencies required of a plant facilities specialist (31)	31
would include school environmental factors as important (15)	32
am able to conduct various surveys when collecting necessary data (42)	33
am of the opinion that vocational program planning within the scope of educational specifications includes knowledge of all other educational planning for comprehensiveness (47)	34
would include flexibility in total program as important to developing educational specifications (25)	35

TABLE VII (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
am of the opinion that securing necessary information of site might include land use maps, aerial photography, soil maps, topographic maps, highway maps, school service area maps, dwelling unit maps and total population projections (1)	36
must help define vocational educational goals, formulate and describe learning processes, and produce a guide for planning and design (40)	37
am of the opinion that the educational planning specialist should have competencies which include the knowledge of proper control and balance of temperature, humidity, dust, acoustics, and lighting (8)	38
recognize the responsibility to conduct and direct research when determining relationship between the new building and a forward looking education program to meet changing needs (45)	39
would include general classroom organization and program of activities as important (66)	40
must be able to develop long-range enrollment projections by curriculum areas (65)	41
would expect a plant facilities specialist to be able to provide a specialized service and that he would be specifically trained for this function (2)	42
am of the opinion that there is a need of building facilities specialist because of the projected construction around the country that amount to many billions of dollars (12)	43
would include characteristics of administration spaces as important (22)	44
am of the opinion that the educational specialist should have competencies when developing specifications of zoned environmental control and modular construction to secure flexibility (24)	45
am of the opinion that a comprehensive, unified state and area planning to meet the needs of the students on a long-range basis with a master plan is most necessary (30) . . .	46

TABLE VII (continued)

Competencies Competences Rated "Agree"	Rank Order of Importance
would include special classroom areas and program of activities as important (39)	47
must make several thousand coordinated decisions, creating both buildings and spaced which belong to their time, place, and purpose (54)	48
must help arrange and proportion the working and amenities of a site to make it unique, complete, and aesthetic (32)	49
am of the opinion that the determination of financial program is one of the most important criteria when planning facilities (37)	50
would include school student circulation (inside and outside) pattern as important (50)	51
am of the opinion that a "community participation" means emphasis placed on citizens representative of all segments of the community (41)	52
would include facilities for exceptional students as important (64)	53
am of the opinion that upgrading at all levels of professional teacher education in the area of future plant facilities planning is necessary if we are to achieve the goal of having competent plant facilities planning specialists and assistants (48)	54
would include instructional planning centers with offices as important to the program (60)	55
am of the opinion that the educational planning specialist should have competencies which include the knowledge of being able to blend the aesthetic factor with spatial, safety, sonic, thermal, and visual environments (61) . . .	56
would expect a facilities director to be able to provide the necessary stimulation, support, impetus, and direction for the writing of educational specifications (63)	57
feel that a facilities specialist should provide an effective means of adequate supervision and evaluation of educational specifications (18)	58

TABLE VII (continued)

Competencies Competencies Rated "Agree"	Rank Order of Importance
would include physical education facilities as part of total program as important (38)	59
would include a student-teacher technology resource center as important (57)	60
would include using one of the new techniques of project planning and control when working with the architect such as a systems approach (53)	61
would include characteristics needed in auditorium space as important (23)	62
am able to gather pertinent literature by using latest bibliographies of facilities information (3)	63
be able to determine just what equipment is needed to meet the demands of the program by inspection of instructional units (59)	64
would need the guidance and assistance of an experienced facilities specialist to lead and coordinate efforts when development of educational specifications are needed (49)	65
am of the opinion that such citizen representatives by officially appointed (33)	66
am of the opinion that all vocational education programs are now assessed in terms of national, state and local needs (69)	67
Competencies Rated "Neutral"	
am of the opinion that standard questionnaires and criteria developed by the National Council on Schoolhouse Construction and the American Institute of Architects might be used for the selection of the architect (44)	68
am of the opinion that these building facilities specialists must have competencies built on different courses of study than those of a vocational administrator (55)	69

TABLE VII (continued)

Competencies	Rank Order of Importance
Competencies Rated "Neutral"	
am of the opinion that the planning of school plant facilities take into account the emergence of housing facilities as a part of total planning (56)	70
am of the opinion that educators have accepted too little of the responsibility in the area of planning new plant facilities (28)	71
Competencies Rated "Disagree" and "Strongly Disagree" (None)	

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. RESTATEMENT OF PROBLEM

As mentioned in previous chapters, accomplishments of vocational educators, although meager in scope, to encourage long-range planning, implementation of new concepts and programs, and evaluation of all programs has begun. We have seen and understand the challenge of change for the accomplishment of new goals. We have seen the passage of new laws, results of reports from committees on national and state levels, and pressures from labor, business, education, industry and others to accomplish a far greater effort in vocational education than had been done. With change come many problems, one of which concerned us with the planning of new facilities and the selection of persons capable of combining new plant facilities with the vocational programs.

These problems need to have been resolved yesterday and if solutions are not found quickly, justifiable criticism will erupt about us. This criticism will come from the tax-payer, interested citizens, government agencies, educators outside vocational education, and those recipients--America's greatest resource--our students. An awareness of these problems and an interest in contributing to their solutions led to the consideration of the topic chosen for this research project.

The purpose for investigation of this problem, stated broadly, was fourfold: (1) to develop criteria for the selection of a vocational plant facilities specialist, (2) to develop criteria for the selection of those assistants to a vocational plant facilities specialist, (3) to develop instruments which would be of use in the selection process, and (4) to develop a selected bibliography of informative literature that would be of use to those responsible in the planning, implementation, and evaluation of vocational plant facilities.

II. REVIEW OF PROCEDURES

In pursuit of a solution to the problem the study began initially with the development of a list of factors which were considered to be important in developing criteria and instruments in the selection process of a plant facilities specialist and his assistants. It was also felt necessary to this study to develop a selected bibliography of informative literature. The list of factors was based upon information gained from a review of literature and information made available from sources such as interviews with experienced vocational educators, interested private corporations, interested State level personnel, and materials gathered by this writer in the past few years.

These factors were put on two separate lists, one related to the plant facilities specialist competencies (Part B) and the other related to an assistant to the plant facilities specialist (Part A).

A questionnaire (Appendix A) containing both instruments was prepared for submission to a jury of experts (Appendix B). The purpose of the questionnaire was to provide information concerning the validity of the two lists of factors which had been developed.

Following the validation procedure the factors were then identified as instrument items. A second questionnaire was then prepared for submission to a population which included all vocational administrators, full-time teachers, and part-time teachers of trade and industrial education in the central region of Pennsylvania. Item weights to the responses were then tabulated and computed. The tabulations can be found in Appendix E and the computations can be found in Chapter III.

Analysis and interpretation of the data collected from the use of the instruments provided information concerning: (1) validity of the instruments, (2) reliability of the instruments, and (3) appropriateness of the instruments' items for use as criteria for the selection of plant facilities specialists and their assistants.

III. SUMMARY OF FINDINGS

This report on the findings from the study of the competencies necessary of plant facilities specialists and their assistants helps to establish the criteria for the evaluation of programs for such preparation.

Leaders in vocational teacher education gave their considered judgment to the establishment of two lists of required competencies. The validity of the findings rests mainly on the expertness of the participants who, because of their broad experience and preparation, were recognized as qualified to express opinions based on sound judgment.

Employed administrators and teachers of trade and industrial programs rated the relative importance of competencies of plant facilities specialists and their assistants in similar rank order which shows statistically significant relationship. The similarity in the ratings by the groups provided the best indication of the order of importance of the items.

These competencies constitute what the plant facilities specialist role or the assistant's role should call for and they also provide the framework for reviewing vocational teacher education curriculum to determine whether revisions might be necessary for the preparation of a plant facilities specialist and/or his assistants. The curriculum for the above named individuals will be successful to the extent that it infuses these specialists with these competencies.

In summary the findings consist of:

1. Plant Facilities Specialists and their assistants need many distinctive skills and abilities in addition to those required of vocational administrators and teachers.
2. The opinions of successful full-time teachers indicated that the list of competencies was valid. From the list of forty-three items (Part A), six were rated "strongly agree" and thirty-two "agree".
3. The opinions of successful part-time teachers indicated that the list of competencies was valid. From the list of forty-three items (Part A), four were rated "strongly agree" and thirty-one "agree".
4. The opinions of successful local administrators indicated that the list of competencies was valid. From the list of forty-three items (Part A), six were rated "strongly agree" and twenty-nine "agree".
5. The opinion of employed local administrators indicated that of the list of seventy-one items (Part B), ten were rated

"strongly agree" and fifty-seven "agree".

6. There was a high degree of association between ratings of the forty-three competencies by successful part-time and full-time teachers and local administrators.
7. There was a marked difference of opinion between the three groups concerning the relative importance of six of the competencies evaluated.

IV. CONCLUSIONS

These findings have implications for many facets of trade and industrial education. Those who can profit most will be the teacher educators, local and state administrators, and the teachers whose preparation is improved through the development of a more effective teacher education curriculum.

Teachers, in seeking standards against which to measure progress, can use the list of competencies as a check list. The competencies needed by a successful plant facilities specialist or an assistant have been successfully identified in this study; the specialist or his assistant have a basis for the selection of personal goals and a criteria for self-evaluation.

Teacher educators seeking criteria for the evaluation of teacher-education programs can group the competencies into a set of criteria against which to equate the various phases of the teacher-education program. The increasingly heavy demand on teacher education, not now even in the planning stage, for the preparation of effective plant facilities specialists and their assistants requires the most efficient methods. Information on desirable standards should be made available promptly if it is to have a significant and immediate effect on the development of competent plant facilities specialists and their assistants.

Supervisory personnel, seeking effective means for the improvement or upgrading of teachers in plant facilities planning, can use the competencies list in setting goals for in-service training programs to improve the physical plant planning qualifications of their teaching staffs. Many opportunities can be found in local school systems to provide for such improvement of staff competencies.

Those concerned with the setting of professional certification standards and the development of instruments and techniques for the effective selection of staff members will find the list of competencies helpful in establishing the criteria for measurable qualities. An instrument sufficiently sophisticated to set a quality line to insure successful participation of those engaged in the planning of plant facilities is a goal worthy of professional pursuit.

V. RECOMMENDATIONS

The results of this study afford many implications of application to trade and industrial education, not only in Pennsylvania, but to the states as a whole. Therefore, it is recommended:

1. That the criteria developed from this study be used as guides in providing an objective approach to the formulation of state plans incorporating within such plans: (1) establishment of plant facilities specialists and their assistants, and (2) establishment of educational specifications guidelines.

2. That the developed instruments be applied on state and nation-wide surveys prior to adoption of such vocational state plans.
3. That further identification of competencies of plant facilities specialists and their assistants can best be accomplished through further study or research of: (1) basic general education, (2) professional education, (3) specialized professional education, (4) specialized-field preparation in school or on the job, and (5) direct experience.
4. That an analysis of in-service development of vocational staff members to determine which competencies can best be developed on the job.
5. That an evaluation of the proficiency of local vocational staff members in relation to the competencies needed by them in planning, implementing, and evaluating plant facilities.
6. That an identification of the role of state and local directors and supervisors in improving the competence of vocational educators involved in plant facilities planning, implementation and evaluation be studied.

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APPENDIXES

APPENDIX A

Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

THE VOCATIONAL EDUCATORS ATTITUDE SCALES

Definitions:

A School Plant Facilities Specialist has three basic functions which are: 1) to induce thoughtful consideration of the total school program to plant facilities through self-critical analysis and research, outside consultants, and lay participants; 2) to design the machinery for implementation of analysis and change; 3) to produce desirable changes in curriculum and instructional methods. This means development of coordination between himself, community, industry, and other educators.

Educational Specifications are those necessary educational specifications or procedures by which vocational school buildings are planned. The necessary elements to be presented to the architect through the written instrument designed for this purpose include: identification; philosophy; organization; site selection and development; school environmental factors; characteristics and specifications of spaces such as library, shops, laboratories, classrooms, maintenance, administration suites, food service, circulation, and auditorium.

Instructions to Jury Members: Listed below are a number of statements that have been developed to determine the value of activities, knowledges, and characteristics that vocational educators should perform or possess when assisting in a specific phase of the overall planning of vocational plant facilities. Indicate the value of each activity according to the following instructions:

1. Make a check mark (✓) in the FIRST column (Great Value) if you judge the item to be a very important activity.

2. Make a check mark (✓) in the SECOND column (Real Value) if you judge the item to be an activity that is important.

3. Make a check mark (✓) in the THIRD column (Little Value) if you judge the item to be an activity that is not very important.

4. Make a check mark (✓) in the FOURTH column (No Value) if you judge the item to an activity that is of no value.

* *

PART A

Statements to be Evaluated	Great Value	Real Value	Little Value	No Value
As a teacher, I				
1. believe that teacher preparation of audio-visual materials should be a time set aside by administration for such preparations	( )	( )	( )	( )
2. think that courses would be more effective by using the team teaching method	( )	( )	( )	( )
3. believe that any media used in publicizing a particular program is a must	( )	( )	( )	( )
4. can keep abreast of change by summer employment, in-service teacher training, professional associations, and study of pertinent literature	( )	( )	( )	( )
5. should be able to justify all new equipment	( )	( )	( )	( )
6. should look to supervisors for help when deciding what must be taught	( )	( )	( )	( )
7. would like to have an audio-visual specialist on the staff for assistance when producing audio-visual materials	( )	( )	( )	( )
8. feel that an understanding of graphic presentation techniques can increase the variety of materials used in the teaching process	( )	( )	( )	( )
9. know that if a shop or laboratory has been well planned there will be little tool and equipment loss	( )	( )	( )	( )
10. must continue to up-grade competence levels by adding competencies necessary when helping determine new plant facilities planning	( )	( )	( )	( )
11. must understand long-range planning	( )	( )	( )	( )

	Great Value	Real Value	Little Value	No Value
12. should accept the prime responsibility to prepare teaching materials for his specific course content . . .	( )	( )	( )	( )
13. feel that all organizations and community groups should participate in a community-school relationship	( )	( )	( )	( )
14. feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications	( )	( )	( )	( )
15. believe that a teacher should work with other teachers rather than individually when preparing course materials	( )	( )	( )	( )
16. think labor unions representation have a share in planning vocational programs	( )	( )	( )	( )
17. feel that prepared teaching materials by others will not always fit a specific course of study	( )	( )	( )	( )
18. feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities	( )	( )	( )	( )
19. would recognize the value of having offices for teachers	( )	( )	( )	( )
20. must be able to use catalogs, take expert advice and order the proper equipment	( )	( )	( )	( )
21. am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process	( )	( )	( )	( )

	Great Value	Real Value	Little Value	No Value
22. should be provided materials for demonstration purposes as a part of planning shop or laboratory needs	( )	( )	( )	( )
23. should have the help of an advisory committee when revising the content of my course or courses	( )	( )	( )	( )
24. feel that attendance at teacher meetings are a must because they are conducted in a collegial manner	( )	( )	( )	( )
25. feel that teachers must work together and relate their courses to the other courses where possible	( )	( )	( )	( )
26. know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area	( )	( )	( )	( )
27. am able to keep abreast of the latest information by gathering pertinent literature on plant facilities	( )	( )	( )	( )
28. must be able to determine quantities of equipment and supplies needed to meet all demands in an area	( )	( )	( )	( )
29. feel that competent students could act as assistants to the teacher preparing audio-visual materials	( )	( )	( )	( )
30. must have the best possible help of experts in a field in keeping a course up-to-date	( )	( )	( )	( )
31. must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determing space requirements	( )	( )	( )	( )
32. would recognize the value of having an instructional planning center within the over-all educational facilities	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
33.	would be able to assist an experienced facilities specialist to develop educational specifications . .	( )	( )	( )	( )
34.	feel that some short courses, clinics, workshops, etc., would be needed for learning procedures of preparing teaching materials	( )	( )	( )	( )
35.	should shoulder the major part of the responsibility in shop or laboratory layout and design	( )	( )	( )	( )
36.	should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable .	( )	( )	( )	( )
37.	would recognize that planning plant facilities without educational specifications should not be attempted	( )	( )	( )	( )
38.	must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process	( )	( )	( )	( )
39.	should consider all the aspects of safety as an integral part of any program	( )	( )	( )	( )
40.	should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry	( )	( )	( )	( )
41.	would prefer to have an individualized building preparation center for producing audio-visual materials . .	( )	( )	( )	( )
42.	should be able to prepare teaching aids and know when to use them . . .	( )	( )	( )	( )
43.	must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning	( )	( )	( )	( )

PART B

Instructions to Jury Members: Listed below are a number of statements that have been developed to determine the value of activities, knowledges, and characteristics that vocational administrators should perform or possess when acting in the role of a School Plant Facilities Specialist or acting in a role of assisting the School Plant Facilities Specialist. Indicate the value of each activity described using the same instructions as utilized for Part A.

* *

Statements to be Evaluated	Great Value	Real Value	Little Value	No Value
As an Administrator, I				
1. am of the opinion that securing necessary information of site might include land use maps, aerial photography, soil maps, topographic maps, highway maps, school service area maps, dwelling unit maps and total population projections	( )	( )	( )	( )
2. would expect a plant facilities specialist to be able to provide a specialized service and that he would be specifically trained for this function	( )	( )	( )	( )
3. am able to gather pertinent literature by using latest bibliographies of facilities information	( )	( )	( )	( )
4. must favor and use to fullest advantage committee type organizations made up of other educators, community groups, and other consultants	( )	( )	( )	( )
5. would include site selection and development as important	( )	( )	( )	( )
6. would include laboratory areas as important	( )	( )	( )	( )
7. am of the opinion that school day and year can and should be extended to take advantage of existing facilities for more economy	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
8.	am of the opinion that the educational planning specialist should have competencies which include the knowledge of proper control and balance of temperature, humidity, dust, acoustics, and lighting	( )	( )	( )	( )
9.	would recognize that the planning of facilities has to be accompanied by written educational specifications.	( )	( )	( )	( )
10.	am of the opinion that teachers involved in some phase of educational specifications must have to develop and upgrade competencies in their professional preparations in that area	( )	( )	( )	( )
11.	am of the opinion that there is a need of building facilities specialist because of the projected construction around the country that amount to many billions of dollars	( )	( )	( )	( )
12.	must use good public relations but more important must maintain a community level relations	( )	( )	( )	( )
13.	am willing to spend the necessary time and effort to visit and inspect other similar school plants	( )	( )	( )	( )
14.	am of the opinion that the educational specialist should have the necessary competencies when developing specifications to permit expansion with minimum modification in design and construction	( )	( )	( )	( )
15.	would include school environmental factors as important	( )	( )	( )	( )
16.	would agree that education specifications would include identification data, educational philosophy of school and community, and school organization	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
17.	must know what competencies are needed by the individuals of various committees	( )	( )	( )	( )
18.	feel that a facilities specialist should provide an effective means of adequate supervision and evaluation of educational specifications	( )	( )	( )	( )
19.	recognize the responsibility when developing plans for the maximum utilization and preservation of the building	( )	( )	( )	( )
20.	feel that in preparing educational specifications the time element involved should never be a deterrent to good planning	( )	( )	( )	( )
21.	am of the opinion that the community resources can be considered as school facilities in which learning takes place	( )	( )	( )	( )
22.	would include characteristics of administration spaces as important	( )	( )	( )	( )
23.	am of the opinion that the educational specialist should have competencies when developing specifications of zoned environmental control and modular construction to secure flexibility	( )	( )	( )	( )
24.	would include flexibility in total program as important	( )	( )	( )	( )
25.	would include characteristics needed in auditorium as important	( )	( )	( )	( )
26.	must show the leadership abilities needed to secure the active cooperation of community, staff, and organizations	( )	( )	( )	( )
27.	must help choose a site for vocational facilities within reach of the people of a large area such as, but not necessarily, a county	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
28.	am of the opinion that education has accepted too little of the responsibility in the area of planning new plant facilities	( )	( )	( )	( )
29.	would include rest-room facilities as important	( )	( )	( )	( )
30.	am of the opinion that a comprehensive, unified state and area planning to meet the needs of the students on a long-range basis with a master plan is most necessary	( )	( )	( )	( )
31.	am of the opinion that there is an expanding need for additional research on competencies required of a plant facilities specialist	( )	( )	( )	( )
32.	must help arrange and proportion the workings and amenities of a site to make it unique, complete, and aesthetic	( )	( )	( )	( )
33.	am of the opinion that such citizen representatives be officially appointed	( )	( )	( )	( )
34.	would include general characteristics, food preparation center, dining area, and environmental aspects of food service as important	( )	( )	( )	( )
35.	must be able to justify the concept of having facilities and equipment conforming to industrial standards.	( )	( )	( )	( )
36.	must be able to utilize the advice and aid given from the experiences of staff, other schools, associations, state and federal offices when determining space requirements	( )	( )	( )	( )
37.	am of the opinion that the determination of financial program is one of the most important criteria when planning facilities	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
38.	would include physical education characteristics as part of total program as important	( )	( )	( )	( )
39.	would include special classroom areas and program of activities as important	( )	( )	( )	( )
40.	must help define vocational educational goals, formulate and describe learning processes, and produce a guide for planning and design	( )	( )	( )	( )
41.	am of the opinion that a "community participation" means emphasis placed on citizens representative of all segments of the community	( )	( )	( )	( )
42.	am able to conduct various surveys when collecting necessary data	( )	( )	( )	( )
43.	am of the opinion that the environment of facilities can add or detract from the learning experiences of students	( )	( )	( )	( )
44.	am of the opinion that standard questionnaires and criteria developed by the National Council on Schoolhouse Construction and the American Institute of Architects might be used for the selection of the architect	( )	( )	( )	( )
45.	recognize the responsibility to conduct and direct research when determining relationship between the new building and a forward looking education program to meet changing needs	( )	( )	( )	( )
46.	am of the opinion that criteria for site selection include size, site characteristics, cost, accessibility, environment, and regional planning	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
47.	am of the opinion that program planning within the scope of educational specifications includes a continuing plan from the elementary to the secondary and then on to the post-secondary	( )	( )	( )	( )
48.	am of the opinion that upgrading, at all levels, of professional teacher education needs more support on national, state, and local basis	( )	( )	( )	( )
49.	would need the guidance and assistance of an experienced facilities specialist to lead and coordinate efforts when developments of educational specifications are needed	( )	( )	( )	( )
50.	would include school circulation (inside and outside) pattern as important	( )	( )	( )	( )
51.	agree that the use of educational specifications is necessary when planning school plant facilities	( )	( )	( )	( )
52.	would include custodial services and maintenance operations as important	( )	( )	( )	( )
53.	would include using one of the new techniques of project planning and control when working with the architect such as a systems approach	( )	( )	( )	( )
54.	must make several thousand coordinated decisions, creating both buildings and spaces which belong to their time, place, and purpose.	( )	( )	( )	( )
55.	am of the opinion that these building facilities specialists must have competencies built on different courses of study than those of a vocational administrator	( )	( )	( )	( )

	Great Value	Real Value	Little Value	No Value
65. must be able to develop long-range enrollment projections by curriculum areas	( )	( )	( )	( )
66. would include general classroom organization and program of activities as important	( )	( )	( )	( )
67. must be able to work closely with the architects, engineers, and contractors during the construction period	( )	( )	( )	( )
68. must know how to help choose a considerable variety of equipment needed for laboratory work in meeting educational objectives	( )	( )	( )	( )
69. am of the opinion that all vocational education programs are now assessed in terms of national, state, and local needs	( )	( )	( )	( )
70. would include shop areas as important	( )	( )	( )	( )
71. must have a thorough understanding of uses of the laboratories as a "proving ground" for the student to utilize his mathematical tools and confirm the theory of the science classroom	( )	( )	( )	( )

* *

NOTE: Members of the jury are invited to list other activities that would aid in determining the value that vocational educators should perform or possess when planning vocational plant facilities.

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APPENDIX B

VALIDATING JURY

George L. Brandon, Head
Department of Vocational Education
The Pennsylvania State University
250 Chambers Building
University Park, Pennsylvania

Hilding E. Nelson
Assistant Professor
Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

Robert H. Binkley
Area Coordinator of Industrial Education
The Pennsylvania State University
University Park, Pennsylvania

Louis B. Kirkland, Area Coordinator of Industrial Education
The Pennsylvania State University
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Edward D. Cory
Graduate Assistant
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The Pennsylvania State University
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Seymour T. Brantner
Associate Professor
Department of Vocational Education
The Pennsylvania State University
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Clair F. Fitz, Senior Area Coordinator of Industrial Education
The Pennsylvania State University
250 Chambers Building
University Park, Pennsylvania

D. Thomas Moore, Area Coordinator of Industrial Education
The Pennsylvania State University
University Park, Pennsylvania

Donald E. Harris, Instructor
Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

Norman W. Sievert
Graduate Assistant
Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

APPENDIX C

Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

May 6, 1968

Dear Vocational Educator:

I am in the process of making a study and YOU are concerned in a very significant aspect of this study. Will you help me and perhaps, as a result, help yourself in return? You can do this by studying the following material, answering some questions that only require check marks and return these pages to me in the self addressed, stamped envelope.

My study concerns the complex planning needed when determining what goes into planning and operating new vocational plant facilities and what specific competencies are needed by the vocational educators who will take part in this planning and operation. (See the attached opionnaire for additional definitions.)

From your opinions it will then be my aim to determine the reaction and support that could be forthcoming from the results of the enclosed instrument. Your answers do not in any manner commit you to any specific obligation. All data gathered from the combined reactions of all vocational educators participating in the study will be included as part of the study. The opinion expressed by you in relationship to determining planning facilities specialist competencies can be also applied to other levels of responsibility in the hierachy of planning facilities and programs, i.e., specific competencies of a shop or laboratory vocational educator charged with the planning of a specific program or planning new specific facilities.

This is an opportunity for the vocational educator to have a say in the kind of program and objectives that best meets his needs for the future. Won't you take advantage of this opportunity?

I have been favorably impressed with the various occupational programs and the vocational teachers and administrators I have communicated with since coming to The Pennsylvania State University. I have been most fortunate in having the opportunity to work with your state area coordinators, Mr. Binkley and Mr. Fitz, when they checked plans of some of the new proposed A.V.T.S.'s in this state; accompanying them on their visits to those schools where vocational programs were in progress; and meeting many vocational teachers and administrators. If you were not one of those educators that I visited, then perhaps we'll still get together in the next few months.

Sincerely yours,

John L. Peterman

John L. Peterman
512 E. Waring Ave.
State College, Pa. 16801

Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

THE VOCATIONAL EDUCATORS ATTITUDE SCALES

Definitions:

A School Plant Facilities Specialist has three basic functions which are: 1) to induce thoughtful consideration of the total school program to plant facilities through self-critical analysis and research, outside consultants, and lay participants; 2) to design the machinery for implementation of analysis and change; 3) to produce desirable changes in curriculum and instructional methods. This means development of coordination between himself, community, industry, and other educators.

Educational Specifications are those necessary educational specifications or procedures by which vocational school buildings are planned. The necessary elements to be presented to the architect through the written instrument designed for this purpose include: identification; philosophy; organization; site selection and development; school environmental factors; characteristics and specifications of spaces such as library, shops, laboratories, classrooms, maintenance, administration suites, food service, circulation, and auditorium.

Directions: We would like to know how you FEEL about future plant facilities and those competencies needed of educators who plan plant facilities. We want you to answer each item as honestly as you can. We ask you NOT to write your name on these sheets for it is only your truthful answers that are important - it does not matter who the particular individual is.

Please read each statement carefully and indicate the degree to which you agree or disagree with a ( ) mark according to the following scale:

Strongly disagree - I strongly disagree with the statement.
Disagree - I disagree with the statement, but not strongly so.
Neutral - I am neutral toward the statement or I just don't know enough about it.
Agree - I agree with the statement, but not strongly so.
Strongly agree - I strongly agree with the statement.

Do not take unnecessary time in thinking about any particular item. Please do not leave any item out - there is no right or wrong answer - it is just how you feel about things. Other people may have different opinions.

Put a (✓) check mark in the column which comes closest to representing your feelings. Sometimes it might be hard to make up your mind, but do the best you can and do not leave any item out.

As a teacher, I . . . . .

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	believe that facilities, equipment, and supplies for teacher preparation of audio-visual aids should be considered when planning for plant facilities by the administration	( )	( )	( )	( )	( )
2.	think that courses, using team teaching methods, would require a new type educational facility	( )	( )	( )	( )	( )
3.	believe that any media used in publicizing a building program is a must	( )	( )	( )	( )	( )
4.	can keep abreast of change regarding the planning of educational plant facilities by means of summer employment, or in-service teacher training, or attendance at professional association meetings, or in a study of pertinent literature	( )	( )	( )	( )	( )
5.	should be able to justify all new equipment	( )	( )	( )	( )	( )
6.	should look to supervisors for assistance and guidance when preparing educational specifications for my area of responsibility	( )	( )	( )	( )	( )
7.	would like to have a media specialist on the staff for assistance and guidance when planning educational specifications in my area	( )	( )	( )	( )	( )
8.	would need the help of an educational facilities planning specialist when preparing those educational specifications pertinent to my program	( )	( )	( )	( )	( )
9.	know that if a shop or laboratory has been well planned there will be little tool and equipment loss	( )	( )	( )	( )	( )
10.	must continue to upgrade competence levels by adding competencies necessary when helping determine new plant facilities planning	( )	( )	( )	( )	( )
11.	must understand long-range planning	( )	( )	( )	( )	( )

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12. am of the opinion that a committee type organization is needed for assistance in developing my specific part of educational specifications	( )	( )	( )	( )	( )
13. feel that all organizations and community groups should participate in a community-school relationship	( )	( )	( )	( )	( )
14. feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications	( )	( )	( )	( )	( )
15. believe that teachers must plan together, rather than individually, in developing education specifications those media materials that will be needed in their programs .	( )	( )	( )	( )	( )
16. think labor unions representation have a share in planning vocational programs . . .	( )	( )	( )	( )	( )
17. feel that in developing that part of educational specifications which is concerned with media materials that purchasing ready-made media materials will not be as effective as teacher-made media materials	( )	( )	( )	( )	( )
18. feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities. .	( )	( )	( )	( )	( )
19. would recognize the value of having offices for teachers	( )	( )	( )	( )	( )
20. must be able to use catalogs, take expert advice and order the proper equipment . . .	( )	( )	( )	( )	( )
21. am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process	( )	( )	( )	( )	( )
22. should be provided materials for demonstration purposes as a part of planning shop or laboratory needs	( )	( )	( )	( )	( )

	Strongly Disagree	Disatree	Neutral	Agree	Strongly Agree
23. see a need of assistance from an advisory committee in developing that part of educational specifications which is concerned with a course of study	( )	( )	( )	( )	( )
24. feel that the collegial method approach in teacher meetings for the developing of educational specifications would result in more effective educational specifications.	( )	( )	( )	( )	( )
25. feel that teachers who work together in organizing courses for inter-relationship when developing educational specifications will upgrade competencies	( )	( )	( )	( )	( )
26. know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area	( )	( )	( )	( )	( )
27. am able to keep abreast of the latest information by gathering pertinent literature on plant facilities	( )	( )	( )	( )	( )
28. must be able to determine quantities of equipment and supplies needed to meet all demands in an area	( )	( )	( )	( )	( )
29. feel that a source of assistance to a teacher preparing a part of educational specifications can come from competent students	( )	( )	( )	( )	( )
30. must have the best possible help of experts in my area of responsibility for preparing educational specifications	( )	( )	( )	( )	( )
31. must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements	( )	( )	( )	( )	( )
32. would recognize the value of having an instructional planning center within the over-all educational facilities	( )	( )	( )	( )	( )
33. would be able to assist an experienced facilities specialist to develop educational specifications	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
34.	feel that some short courses, or clinics, or workshops would be needed for learning procedures in carrying out responsibilities of assisting in developing educational specifications	( )	( )	( )	( )	( )
35.	should shoulder the major part of the responsibility in shop or laboratory layout and design	( )	( )	( )	( )	( )
36.	should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable	( )	( )	( )	( )	( )
37.	would recognize that planning plant facilities without educational specifications should not be attempted	( )	( )	( )	( )	( )
38.	must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process	( )	( )	( )	( )	( )
39.	should consider all the aspects of safety as an integral part of any program	( )	( )	( )	( )	( )
40.	should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry	( )	( )	( )	( )	( )
41.	would prefer to have an individualized building preparation center for producing audio-visual materials	( )	( )	( )	( )	( )
42.	feel that in accepting the new concepts of learning and to effectively use the techniques of new media when designing educational specifications I would need more teacher education	( )	( )	( )	( )	( )
43.	must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning	( )	( )	( )	( )	( )

PART B

	As an Administrator, I	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	am of the opinion that securing necessary information of site might include land use maps, aerial photography, soil maps, topographic maps, highway maps, school service area maps, dwelling unit maps and total population projections	( )	( )	( )	( )	( )
2.	would expect a plant facilities specialist to be able to provide a specialized service and that he would be specifically trained for this function	( )	( )	( )	( )	( )
3.	am able to gather pertinent literature by using latest bibliographies of facilities information	( )	( )	( )	( )	( )
4.	must favor and use to fullest advantage committee type organization made up of other educators, community groups, and other consultants	( )	( )	( )	( )	( )
5.	would include site selection and development as important	( )	( )	( )	( )	( )
6.	would include laboratory areas as important	( )	( )	( )	( )	( )
7.	am of the opinion that school day and year can and should be extended to take advantage of existing facilities for more economy	( )	( )	( )	( )	( )
8.	am of the opinion that the educational planning specialist should have competencies which include the knowledge of proper control and balance of temperature, humidity, dust, acoustics, and lighting	( )	( )	( )	( )	( )
9.	would recognize that the planning of facilities has to be accompanied by written educational specifications	( )	( )	( )	( )	( )
10.	am of the opinion that teachers involved in some phase of educational specifications must have to develop and upgrade competencies in that area	( )	( )	( )	( )	( )
11.	must use good public relations but more important must maintain a community level relations	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12.	am of the opinion that there is a need of building facilities specialist because of the projected construction around the country that amount to many billions of dollars	( )	( )	( )	( )	( )
13.	am willing to spend the necessary time and effort to visit and inspect other similar school plants	( )	( )	( )	( )	( )
14.	am of the opinion that the educational specialist should have the necessary competencies when developing specifications to permit expansion with minimum modification in design and construction	( )	( )	( )	( )	( )
15.	would include school environmental factors as important	( )	( )	( )	( )	( )
16.	would agree that education specifications would include identification data, educational philosophy of school and community, and school organization	( )	( )	( )	( )	( )
17.	must know what competencies are needed by the individuals of various committees	( )	( )	( )	( )	( )
18.	feel that a facilities specialist should provide an effective means of adequate supervision and evaluation of educational specifications	( )	( )	( )	( )	( )
19.	recognize my responsibility when developing plans for the maximum utilization and preservation of the building	( )	( )	( )	( )	( )
20.	feel that in preparing educational specifications the time element involved should never be a deterrent to good planning	( )	( )	( )	( )	( )
21.	am of the opinion that the community resources can be considered as school facilities in which learning takes place	( )	( )	( )	( )	( )
22.	would include characteristics of administration spaces as important	( )	( )	( )	( )	( )
23.	would include characteristics needed in auditorium space as important	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
24.	am of the opinion that the educational specialist should have competencies when developing specifications of zoned environmental control and modular construction to secure flexibility	( )	( )	( )	( )	( )
25.	would include flexibility in total program as important to developing educational specifications	( )	( )	( )	( )	( )
26.	must show the leadership abilities needed to secure the active cooperation of community, staff, and organizations	( )	( )	( )	( )	( )
27.	must help choose a site for vocational facilities within reach of the people of a large area such as, but not necessarily, a county	( )	( )	( )	( )	( )
28.	am of the opinion that educators have accepted too little of the responsibility in the area of planning new plant facilities	( )	( )	( )	( )	( )
29.	would include rest-room facilities as important	( )	( )	( )	( )	( )
30.	am of the opinion that a comprehensive, unified state and area planning to meet the needs of the students on a long-range basis with a master plan is most necessary	( )	( )	( )	( )	( )
31.	am of the opinion that there is an expanding need for additional research on competencies required of a plant facilities specialist	( )	( )	( )	( )	( )
32.	must help arrange and proportion the workings and amenities of a site to make it unique, complete, and aesthetic	( )	( )	( )	( )	( )
33.	am of the opinion that such citizen representatives be officially appointed	( )	( )	( )	( )	( )
34.	would include general characteristics, food preparation center, dining area, and environmental aspects of food service as important	( )	( )	( )	( )	( )
35.	must be able to justify the concept of having facilities and equipment conforming to industrial standards	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
36.	must be able to utilize the advice and aid given from the experiences of staff, other schools, associations, state and federal offices when determining space requirements .	( )	( )	( )	( )	( )
37.	am of the opinion that the determination of financial program is one of the most important criteria when planning facilities . . .	( )	( )	( )	( )	( )
38.	would include physical education facilities as part of total program as important	( )	( )	( )	( )	( )
39.	would include special classroom areas and program of activities as important	( )	( )	( )	( )	( )
40.	must help define vocational educational goals, formulate and describe learning processes, and produce a guide for planning and design	( )	( )	( )	( )	( )
41.	am of the opinion that a "community participation" means emphasis placed on citizens representative of all segments of the community	( )	( )	( )	( )	( )
42.	am able to conduct various surveys when collecting necessary data	( )	( )	( )	( )	( )
43.	am of the opinion that the environment of facilities can add or detract from the learning experiences of students	( )	( )	( )	( )	( )
44.	am of the opinion that standard questionnaires and criteria developed by the National Council on Schoolhouse Construction and the American Institute of Architects might be used for the selection of the architect . . .	( )	( )	( )	( )	( )
45.	recognize the responsibility to conduct and direct research when determining relationship between the new building and a forward looking education program to meet changing needs	( )	( )	( )	( )	( )
46.	am of the opinion that criteria for site selection include size, site characteristics, cost, accessibility, environment, and regional planning	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
47.	am of the opinion that vocational program planning within the scope of educational specifications includes knowledge of all other educational planning for comprehensiveness	( )	( )	( )	( )	( )
48.	am of the opinion that upgrading at all levels of professional teacher education in the area of future plant facilities planning is necessary if we are to achieve the goal of having competent plant facilities planning specialists and assistants	( )	( )	( )	( )	( )
49.	would need the guidance and assistance of an experienced facilities specialist to lead and coordinate efforts when development of educational specifications are needed	( )	( )	( )	( )	( )
50.	would include school student circulation (inside and outside) pattern as important	( )	( )	( )	( )	( )
51.	agree that the use of educational specifications is necessary when planning school plant facilities	( )	( )	( )	( )	( )
52.	would include custodial services and maintenance operations as important	( )	( )	( )	( )	( )
53.	would include using one of the new techniques of project planning and control when working with the architect such as a systems approach	( )	( )	( )	( )	( )
54.	must make several thousand coordinated decisions, creating both buildings and spaces which belong to their time, place, and purpose	( )	( )	( )	( )	( )
55.	am of the opinion that these building facilities specialists must have competencies built on different courses of study than those of a vocational administrator	( )	( )	( )	( )	( )
56.	am of the opinion that the planning of school plant facilities take into account the emergence of housing facilities as a part of total planning	( )	( )	( )	( )	( )

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
57.	would include a student-teacher technology resource center as important	( )	( )	( )	( )	( )
58.	am of the opinion that the architect selection process should contain the open selection method which determines the architects established reputation, demonstrated ability, and recommendations from previous clients	( )	( )	( )	( )	( )
59.	be able to determine just what equipment is needed to meet the demands of the program by inspection of instructional units	( )	( )	( )	( )	( )
60.	would include instructional planning centers with offices as important to the program	( )	( )	( )	( )	( )
61.	am of the opinion that the educational planning specialist should have competencies which include the knowledge of being able to blend the aesthetic factor with spatial, safety, sonic, thermal, and visual environments	( )	( )	( )	( )	( )
62.	am of the opinion that education specifications need to be developed to reflect new innovations and methods in the technologies of education, such as team teaching, educational television, computerized instruction, and instructional media	( )	( )	( )	( )	( )
63.	would expect a facilities director to be able to provide the necessary stimulation, support, impetus, and direction for the writing of educational specifications	( )	( )	( )	( )	( )
64.	would include facilities for exceptional students as important	( )	( )	( )	( )	( )
65.	must be able to develop long-range enrollment projections by curriculum areas	( )	( )	( )	( )	( )
66.	would include general classroom organization and program of activities as important	( )	( )	( )	( )	( )
67.	must be able to work closely with the architects, engineers, and contractors during the construction period	( )	( )	( )	( )	( )

		Great Value	Real Value	Little Value	No Value
56.	am of the opinion that the planning of school plant facilities take into account the emergence of housing facilities as a part of total planning	( )	( )	( )	( )
57.	would include a student-teacher technology resource center as important	( )	( )	( )	( )
58.	am of the opinion that the architect selection process should contain the open selection method which determines the architects established reputation, demonstrated ability, and recommendations from previous clients	( )	( )	( )	( )
59.	be able to determine just what equipment is needed to meet the demands of the program by inspection of instructional units	( )	( )	( )	( )
60.	would include instructional planning centers with offices as important to the program	( )	( )	( )	( )
61.	am of the opinion that the educational planning specialist should have competencies which include the knowledge of being able to blend the aesthetic factor with spatial, safety, sonic, thermal, and visual environments	( )	( )	( )	( )
62.	of the opinion that education specifications need to be developed to reflect new innovations and methods in the technologies of education, such as team teaching, educational television, computerized instruction, and instructional media	( )	( )	( )	( )
63.	would expect a facilities director to be able to provide the necessary stimulation, support, impetus, and direction for the writing of educational specifications	( )	( )	( )	( )
64.	would include facilities for exceptional students as important	( )	( )	( )	( )

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
68. must know how to help choose a considerable variety of equipment needed for laboratory work in meeting educational objectives . . .	( )	( )	( )	( )	( )
69. am of the opinion that all vocational education programs are now assessed in terms of national, state, and local needs	( )	( )	( )	( )	( )
70. would include shop areas as important	( )	( )	( )	( )	( )
71. must have a thorough understanding of uses of the laboratories as a "proving ground" for the student to utilize his mathematical tools and confirm the theory of the science classroom	( )	( )	( )	( )	( )

* * * * * * * *

NOTE: Vocational educators are invited to list any other activities that they think would aid those vocational educators in planning plant facilities. Any other suggestions or comments would also be appreciated.

Thank you for your time and effort.

APPENDIX D

DATA COLLECTED FROM VALIDATING JURY

TABLE VIII	Tabulation of Responses Obtained for Each Item Factor (Part A) Listed on Questionnaire Submitted to Validating Jury
TABLE IX	Tabulation of Responses Obtained for Each Item Factor (Part B) Listed on Questionnaire Submitted to Validating Jury

TABLE VIII

TABULATION OF RESPONSES OBTAINED FOR EACH ITEM FACTOR LISTED ON QUESTIONNAIRE SUBMITTED TO VALIDATING JURY

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
1. believe that teacher preparation of audio-visual materials should be a time set aside by administration for such preparations . .	4	40.0	6	60.0	0	0.0	0	0.0
2. think that courses would be more effective by using the team teaching method	5	50.0	5	50.0	0	0.0	0	0.0
3. believe that any media used in publicizing a particular program is a must	3	30.0	4	40.0	2	20.0	1	10.0
4. can keep abreast of change by summer employment, in-service teacher training, professional associations, and study of pertinent literature	8	80.0	1	10.0	1	10.0	0	0.0
5. should be able to justify all new equipment	7	70.0	3	30.0	0	0.0	0	0.0
6. should look to supervisors for help when deciding what must be taught	2	20.0	6	60.0	2	20.0	0	0.0

TABLE VIII (continued)

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
7. would like to have an audio-visual specialist on the staff for assistance when producing audio-visual materials	5	50.0	4	40.0	1	10.0	0	0.0
8. feel that an understanding of graphic presentation techniques can increase the variety of materials used in the teaching process	6	60.0	3	30.0	1	10.0	0	0.0
9. know that if a shop or laboratory has been well planned there will be little tool and equipment loss	3	30.0	6	60.0	0	0.0	1	10.0
10. must continue to up-grade competence levels by adding competencies necessary when helping determine new plant facilities planning	5	50.0	5	50.0	0	0.0	0	0.0
11. must understand long-range planning	6	60.0	4	40.0	0	0.0	0	0.0
12. should accept the prime responsibility to prepare teaching materials for his specific course content	5	50.0	4	40.0	1	10.0	0	0.0

TABLE VIII (continued)

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
13. feel that all organizations and community groups should participate in a community-school relationship	6	60.0	4	40.0	0	0.0	0	0.0
14. feel that an up-to-date selected bibliography of plant facilities information would be necessary when assisting in the preparation of educational specifications	7	70.0	3	30.0	0	0.0	0	0.0
15. believe that a teacher should work with other teachers rather than individually when preparing course materials	6	60.0	4	40.0	0	0.0	0	0.0
16. think labor unions representation have a share in planning vocational programs . . .	3	30.0	6	60.0	1	10.0	0	0.0
17. feel that prepared teaching materials by others will not always fit a specific course of study	4	40.0	5	50.0	1	10.0	0	0.0
18. feel that the day is coming when teachers will have assistants for many purposes to relieve the teacher of many responsibilities not pertinent to teaching activities	6	60.0	4	40.0	0	0.0	0	0.0

TABLE VIII (continued)

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
19. would recognize the value of having offices for teachers	4	40.0	3	30.0	2	20.0	1	10.0
20. must be able to use catalogs, take expert advice and order the proper equipment . . .	7	70.0	3	30.0	0	0.0	0	0.0
21. am of the opinion that students, parents, organizations, educators, and all interested persons should share in the school-community process	5	50.0	4	40.0	1	10.0	0	0.0
22. should be provided materials for demonstration purposes as a part of planning shop or laboratory needs	6	60.0	3	30.0	1	10.0	0	0.0
23. should have the help of an advisory committee when revising the content of my course or courses	10	100.0	0	0.0	0	0.0	0	0.0
24. feel that attendance at teacher meetings are a must because they are conducted in a collegial manner	3	30.0	3	30.0	2	20.0	2	20.0

TABLE VIII (continued)

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
25. feel that teachers must work together and relate their courses to the other courses where possible	6	60.0	4	40.0	0	0.0	0	0.0
26. know that although there is a minor part to play in planning the overall plant facilities, there is a major part to play when planning their own specific area . . .	6	60.0	4	40.0	0	0.0	0	0.0
27. am able to keep abreast of the latest information by gathering pertinent literature on plant facilities	4	40.0	6	60.0	0	0.0	0	0.0
28. must be able to determine quantities of equipment and supplies needed to meet all demands in an area	8	80.0	2	20.0	0	0.0	0	0.0
29. feel that competent students could act as assistants to the teacher preparing audio-visual materials	5	50.0	5	50.0	0	0.0	0	0.0
30. must have the best possible help of experts in a field in keeping a course up-to-date	8	80.0	2	20.0	0	0.0	0	0.0

TABLE VIII (continued)

PART A - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
31. must be able to utilize the advice and aid from other educators, associations, state, and federal agencies when determining space requirements	7	70.0	3	30.0	0	0.0	0	0.0
32. would recognize the value of having an instructional planning center within the over-all educational facilities	7	70.0	3	30.0	0	0.0	0	0.0
33. would be able to assist an experienced facilities specialist to develop educational specifications	6	60.0	4	40.0	0	0.0	0	0.0
34. feel that some short courses, clinics, workshops, etc., would be needed for learning procedures of preparing teaching materials	5	50.0	5	50.0	0	0.0	0	0.0
35. should shoulder the major part of the responsibility in shop or laboratory layout and design	4	40.0	6	60.0	0	0.0	0	0.0
36. should accept the necessary responsibility to participate in planning the part of plant facilities at the level which I am most knowledgeable	7	70.0	3	30.0	0	0.0	0	0.0

TABLE VIII (continued)

PART A - Item Factors	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
37. would recognize that planning plant facilities without educational specifications should not be attempted	6	60.0	4	40.0	0	0.0	0	0.0
38. must define specific goals, prepare courses of study, and develop a flexible over-all plan for an area of specialization and keep up-to-date as a continuing process	10	100.0	0	0.0	0	0.0	0	0.0
39. should consider all the aspects of safety as an integral part of any program	9	90.0	1	10.0	0	0.0	0	0.0
40. should when planning for a new shop or laboratory try to provide the best acceptable equipment representative of the same type used in trade and industry	9	90.0	1	10.0	0	0.0	0	0.0
41. would prefer to have an individualized building preparation center for producing audio-visual materials	5	50.0	4	40.0	1	10.0	0	0.0
42. should be able to prepare teaching aids and know when to use them	6	60.0	4	40.0	0	0.0	0	0.0
43. must have the competency to develop and conduct surveys for the collection of any necessary data needed in the planning . . .	4	40.0	5	50.0	1	10.0	0	0.0

TABLE IX

TABULATION OF RESPONSES OBTAINED FOR EACH ITEM FACTOR LISTED ON QUESTIONNAIRE SUBMITTED TO VALIDATING JURY

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
1. am of the opinion that securing necessary information of site might include land use maps, aerial photography, soil maps, topographic maps, highway maps, school service area maps, dwelling unit maps and total population projections	6	60.0	4	40.0	0	0.0	0	0.0
2. would expect a plant facilities specialist to be able to provide a specialized service and that he would be specifically trained for this function	7	70.0	3	30.0	0	0.0	0	0.0
3. am able to gather pertinent literature by using latest bibliographies of facilities information	4	40.0	4	40.0	1	10.0	1	10.0
4. must favor and use to fullest advantage committee type organization made up of other educators, community groups, and other consultants	7	70.0	3	30.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
5. would include site selection and development as important	5	50.0	5	50.0	0	0.0	0	0.0
6. would include laboratory areas as important	6	60.0	3	30.0	1	10.0	0	0.0
7. am of the opinion that school day and year can and should be extended to take advantage of existing facilities for more economy	8	80.0	2	20.0	0	0.0	0	0.0
8. am of the opinion that the educational planning specialist should have competencies which include the knowledge of proper control and balance of temperature, humidity, dust, acoustics, and lighting	7	70.0	3	30.0	0	0.0	0	0.0
9. would recognize that the planning of facilities has to be accompanied by written educational specifications	6	60.0	3	30.0	1	10.0	0	0.0
10. am of the opinion that teachers involved in some phase of educational specifications must have to develop and upgrade competencies in their professional preparations in that area	4	40.0	6	60.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
11. am of the opinion that there is a need of building facilities specialist because of the projected construction around the country that amount to many billions of dollars	6	60.0	3	30.0	1	10.0	0	0.0
12. must use good public relations but more important must maintain a community level relations	6	60.0	4	40.0	0	0.0	0	0.0
13. am willing to spend the necessary time and effort to visit and inspect other similar school plants	4	40.0	6	60.0	0	0.0	0	0.0
14. am of the opinion that the educational specialist should have the necessary competencies when developing specifications to permit expansion with minimum modification in design and construction . .	6	60.0	4	40.0	0	0.0	0	0.0
15. would include school environmental factors as important	5	50.0	5	50.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
16. would agree that education specifications would include identification data, educational philosophy of school and community, and school organization	6	60.0	4	40.0	0	0.0	0	0.0
17. must know what competencies are needed by the individuals of various committees . . .	6	60.0	3	30.0	0	0.0	1	10.0
18. feel that a facilities specialist should provide an effective means of adequate supervision and evaluation of educational specifications	3	30.0	7	70.0	0	0.0	0	0.0
19. recognize the responsibility when developing plans for the maximum utilization and preservation of the building	7	70.0	2	20.0	1	10.0	0	0.0
20. feel that in preparing educational specifications the time element involved should never be a deterrent to good planning . . .	5	50.0	4	40.0	0	0.0	1	10.0
21. am of the opinion that the community resources can be considered as school facilities in which learning takes place . .	5	50.0	4	40.0	1	10.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
22. would include characteristics of administration spaces as important	4	40.0	6	60.0	0	0.0	0	0.0
23. am of the opinion that the educational specialist should have competencies when developing specifications of zoned environmental control and modular construction to secure flexibility	6	60.0	3	30.0	1	10.0	0	0.0
24. would include flexibility in total program as important	8	80.0	2	20.0	0	0.0	0	0.0
25. would include characteristics needed in auditorium as important	3	30.0	4	40.0	2	20.0	1	10.0
26. must show the leadership abilities needed to secure the active cooperation of community, staff, and organizations	9	90.0	0	0.0	1	10.0	1	10.0
27. must help choose a site for vocational facilities within reach of the people of a large area such as, but not necessarily, a county	8	80.0	2	20.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
28. am of the opinion that education has accepted too little of the responsibility in the area of planning new plant facilities .	8	80.0	2	20.0	0	0.0	0	0.0
29. would include rest-room facilities as important	6	60.0	3	30.0	1	10.0	0	0.0
30. am of the opinion that a comprehensive, unified state and area planning to meet the needs of the students on a long-range basis with a master plan is most necessary . . .	6	60.0	3	30.0	0	0.0	1	10.0
31. am of the opinion that there is an expanding need for additonal research on competencies required of a plant facilities specialist .	5	50.0	4	40.0	1	10.0	0	0.0
32. must help arrange and proportion the workings and amenities of a site to make it unique, complete, and aesthetic	5	50.0	4	40.0	1	10.0	0	0.0
33. am of the opinion that such citizen representatives be officially appointed . . .	4	40.0	5	50.0	1	10.0	0	0.0
34. would include general characteristics, food preparation center, dining area, and environmental aspects of food service as important	4	40.0	5	50.0	0	0.0	1	10.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
35. must be able to justify the concept of having facilities and equipment conforming to industrial standards	6	60.0	4	40.0	0	0.0	0	0.0
36. must be able to utilize the advice and aid given from the experiences of staff, other schools, associations, state and federal offices when determining space requirements .	6	60.0	4	40.0	0	0.0	0	0.0
37. am of the opinion that the determination of financial program is one of the most important criteria when planning facilities .	6	60.0	4	40.0	0	0.0	0	0.0
38. would include physical education characteristics as part of total program as important	2	20.0	6	60.0	2	20.0	0	0.0
39. would include special classroom areas and program of activities as important	5	50.0	5	50.0	0	0.0	0	0.0
40. must help define vocational educational goals, formulate and describe learning processes, and produce a guide for planning and design	8	80.0	2	20.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
41. am of the opinion that a "community participation" means emphasis placed on citizens representative of all segments of the community	5	50.0	4	40.0	1	10.0	0	0.0
42. am able to conduct various surveys when collecting necessary data	5	50.0	5	50.0	0	0.0	0	0.0
43. am of the opinion that the environment of facilities can add or detract from the learning experiences of students	7	70.0	3	30.0	0	0.0	0	0.0
44. am of the opinion that standard questionnaires and criteria developed by the National Council on Schoolhouse Construction and the American Institute of Architects might be used for the selection of the architect	5	50.0	3	30.0	1	10.0	1	10.0
45. recognize the responsibility to conduct and direct research when determining relationship between the new building and a forward looking education program to meet changing needs	6	60.0	4	40.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
46. am of the opinion that criteria for site selection include size, site characteristics, cost, accessibility, environment, and regional planning	7	70.0	3	30.0	0	0.0	0	0.0
47. am of the opinion that program planning within the scope of educational specifications includes a continuing plan from the elementary to the secondary and then on to the post-secondary	6	60.0	4	40.0	0	0.0	0	0.0
48. am of the opinion that upgrading, at all levels, of professional teacher education needs more support on national, state, and local basis	8	80.0	2	20.0	0	0.0	0	0.0
49. would need the guidance and assistance of an experienced facilities specialist to lead and coordinate efforts when development of educational specifications are needed	5	50.0	5	50.0	0	0.0	0	0.0
50. would include school circulation (inside and outside) pattern as important	5	50.0	4	40.0	1	10.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
51. agree that the use of educational specifications is necessary when planning school plant facilities	8	80.0	2	20.0	0	0.0	0	0.0
52. would include custodial services and maintenance operations as important	6	60.0	4	40.0	0	0.0	0	0.0
53. would include using one of the new techniques of project planning and control when working with the architect such as a systems approach	5	50.0	4	40.0	1	10.0	0	0.0
54. must make several thousand coordinated decisions, creating both buildings and spaces which belong to their time, place, and purpose	4	40.0	6	60.0	0	0.0	0	0.0
55. am of the opinion that these building facilities specialists must have competencies built on different courses of study than those of a vocational administrator	5	50.0	4	40.0	1	10.0	0	0.0
56. am of the opinion that the planning of school plant facilities take into account the emergence of housing facilities as a part of total planning	6	60.0	2	20.0	1	10.0	1	10.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
57. would include a student-teacher technology resource center as important	5	50.0	4	40.0	1	10.0	0	0.0
58. am of the opinion that the architect selection process should contain the open selection method which determines the architects established reputation, demonstrated ability, and recommendations from previous clients	5	50.0	5	50.0	0	0.0	0	0.0
59. be able to determine just what equipment is needed to meet the demands of the program by inspection of instructional units	4	40.0	6	60.0	0	0.0	0	0.0
60. would include instructional planning centers with offices as important to the program	6	60.0	4	40.0	0	0.0	0	0.0
61. am of the opinion that the educational planning specialist should have competencies which include the knowledge of being able to blend the aesthetic factor with spatial, safety, sonic, thermal, and visual environments	7	70.0	3	30.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
62. of the opinion that education specifications need to be developed to reflect new innovations and methods in the technologies of education, such as team teaching, educational television, computerized instruction, and instructional media	8	80.0	2	20.0	0	0.0	0	0.0
63. would expect a facilities director to be able to provide the necessary stimulation, support, impetus, and direction for the writing of educational specifications . . .	6	60.0	4	40.0	0	0.0	0	0.0
64. would include facilities for exceptional students as important	6	60.0	3	30.0	0	0.0	1	10.0
65. must be able to develop long-range enrollment projections by curriculum areas . . .	7	70.0	3	30.0	0	0.0	0	0.0
66. would include general classroom organization and program of activities as important	6	60.0	4	40.0	0	0.0	0	0.0
67. must be able to work closely with the architects, engineers, and contractors during the construction period	6	60.0	4	40.0	0	0.0	0	0.0

TABLE IX (continued)

PART B - Item Factors	Number and Per Cent of Jurors							
	Judged Factor Great Value		Judged Factor Real Value		Judged Factor Little Value		Judged Factor No Value	
	No.	%	No.	%	No.	%	No.	%
68. must know how to help choose a considerable variety of equipment needed for laboratory work in meeting educational objectives	5	50.0	5	50.0	0	0.0	0	0.0
69. am of the opinion that all vocational education programs are now assessed in terms of national, state, and local needs	4	40.0	3	30.0	1	10.0	2	20.0
70. would include shop areas as important . . .	9	90.0	1	10.0	0	0.0	0	0.0
71. must have a thorough understanding of uses of the laboratories as a "proving ground" for the student to utilize his mathematical tools and confirm the theory of the science classroom	7	70.0	3	30.0	0	0.0	0	0.0

APPENDIX E

DATA COLLECTED FROM STUDY POPULATION

TABLE X Total Responses Per Item (Part A) From Full-Time Teachers, Part-Time Teachers, and Local Administrators of Vocational Trade and Industrial Programs

TABLE XI Responses Per Item (Part B) From Local Administrators of Vocational Trade and Industrial Programs

TABLE X

TOTAL RESPONSES PER ITEM (PART A) PER GROUP FROM THE LOCAL ADMINISTRATORS, FULL-TIME TEACHERS, AND PART-TIME TEACHERS OF VOCATIONAL TRADE AND INDUSTRIAL PROGRAMS

Item	Ratings of Importance														
	Local Administrators					Full-time Teachers					Part-time Teachers				
No.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	0	0	0	5	23	4	1	0	23	94	0	0	1	10	16
2.	0	8	3	14	3	2	16	42	46	16	0	3	10	9	5
3.	0	0	4	13	11	1	7	20	60	34	0	5	8	13	1
4.	1	2	4	14	7	1	8	14	56	43	0	2	2	18	5
5.	0	0	1	7	20	0	5	7	37	37	0	2	2	10	13
6.	0	2	1	14	11	7	11	5	61	24	3	2	1	16	5
7.	0	1	10	16	1	5	11	26	55	24	1	6	5	14	1
8.	0	5	7	13	3	4	37	29	39	12	1	6	7	11	2
9.	0	3	7	11	7	3	16	8	53	42	0	2	1	10	14
10.	0	0	4	17	7	0	2	10	72	38	0	2	5	15	5
11.	0	1	0	16	11	0	2	5	66	48	0	3	2	11	11

TABLE X (continued)

Item	Ratings of Importance														
	Local Administrators					Full-time Teachers					Part-time Teachers				
No.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12.	1	3	4	12	8	2	15	12	67	26	0	8	4	13	2
13.	0	3	4	13	8	2	19	12	52	37	1	9	6	10	1
14.	0	0	7	17	4	1	6	21	66	27	0	1	5	17	4
15.	0	0	1	17	10	0	11	8	44	58	1	4	0	12	10
16.	0	1	5	17	5	16	16	18	52	20	4	2	3	11	7
17.	2	6	11	7	2	16	46	22	28	10	2	9	10	3	3
18.	0	2	7	14	5	2	10	14	57	39	0	1	6	15	5
19.	3	7	1	13	4	0	14	13	40	55	0	3	3	16	5
20.	0	0	4	9	15	0	1	0	24	89	0	0	3	9	15
21.	0	1	3	13	11	2	6	6	58	50	0	2	4	12	9
22.	0	1	1	16	10	0	3	2	36	81	0	0	0	12	15
23.	0	0	3	14	11	3	8	13	66	32	1	1	2	16	6

TABLE X (continued)

Item No.	Ratings of Importance														
	Local Administrators					Full-time Teachers					Part-time Teachers				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
24.	2	3	16	6	1	1	15	49	48	8	0	3	16	6	1
25.	0	0	3	20	5	0	0	13	65	44	0	1	1	16	8
26.	0	0	0	12	16	0	0	8	38	73	0	1	2	10	13
27.	0	5	4	16	2	3	26	14	56	23	0	11	4	8	3
28.	0	1	1	16	10	2	6	1	58	55	0	3	1	11	11
29.	0	6	11	10	1	7	14	19	68	14	1	3	5	16	1
30.	0	2	4	15	7	2	15	20	65	20	0	4	2	18	2
31.	1	0	5	14	8	2	5	8	66	31	0	0	3	17	6
32.	0	0	1	19	8	0	5	20	58	38	0	1	6	13	6
33.	0	1	1	19	7	0	3	22	69	28	0	2	6	16	2
34.	0	1	3	13	10	0	5	10	74	32	0	1	6	14	5
35.	0	1	6	13	7	2	12	12	48	47	0	9	3	11	3

TABLE X (continued)

Item	Ratings of Importance														
	Local Administrators					Full-time Teachers					Part-time teachers				
No.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
36.	0	0	0	13	14	0	1	3	51	66	0	0	2	17	7
37.	0	3	0	13	11	1	4	8	56	53	1	1	0	18	6
38.	0	0	0	10	17	2	2	3	45	69	0	0	3	13	10
39.	0	0	1	3	23	0	0	0	14	107	0	0	0	5	21
40.	0	0	0	4	23	0	0	3	23	95	0	0	0	6	20
41.	1	1	10	13	2	1	12	30	42	46	0	1	11	9	5
42.	1	1	6	17	1	6	20	22	53	20	1	1	4	16	4
43.	0	3	5	14	5	3	7	11	70	30	0	1	6	16	3

TABLE XI

TOTAL RESPONSES PER ITEM (PART B) FROM THE LOCAL ADMINISTRATORS

Item No.	Ratings of Importance				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	0	0	1	14	7
2.	0	1	6	15	11
3.	0	2	9	18	4
4.	0	1	3	11	18
5.	0	0	3	10	20
6.	0	0	0	12	21
7.	0	1	2	9	21
8.	1	2	1	16	13
9.	0	0	1	13	19
10.	0	0	1	20	12
11.	0	0	3	12	18
12	1	1	5	13	13
13.	0	0	1	8	24
14	0	0	1	15	17
15.	0	0	4	16	13
16.	0	0	0	21	12
17.	0	1	1	17	14
18.	1	1	6	18	7
19.	0	0	1	7	24
20.	1	1	1	13	17
21.	0	0	0	21	12
22.	0	0	5	21	7

TABLE XI (continued)

Item No.	Ratings of Importance				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23.	0	2	10	16	5
24.	0	1	4	19	9
25.	0	0	2	22	9
26.	0	0	1	15	17
27.	0	0	3	17	13
28.	3	11	6	4	9
29.	0	0	0	18	15
30	0	3	2	18	10
31.	0	1	4	13	15
32.	0	0	7	19	7
33.	1	4	6	17	4
34.	0	0	2	16	15
35.	0	1	0	11	21
36.	0	0	0	19	14
37.	0	4	6	9	14
38.	0	3	9	12	9
39.	0	0	7	17	9
40.	0	0	1	18	14
41.	0	2	2	19	9
42.	0	1	4	18	10
43.	0	0	0	18	15
44.	1	4	11	13	4
45.	0	0	2	24	7

TABLE XI (continued)

Item No.	Ratings of Importance				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
46.	0	0	1	17	15
47.	0	1	4	14	14
48.	2	1	5	14	11
49.	0	4	9	12	7
50.	0	2	5	17	9
51.	0	0	1	19	13
52.	0	0	1	11	21
53.	0	1	10	19	3
54.	0	2	6	13	11
55.	1	6	13	8	5
56.	1	3	16	12	1
57.	0	1	9	18	5
58.	0	0	1	16	16
59.	1	4	6	15	7
60.	0	1	7	18	7
61.	1	2	4	17	9
62.	0	0	4	16	13
63	0	2	6	18	7
64.	0	1	7	17	8
65.	0	0	2	24	7
66.	0	0	5	18	10
67.	0	3	1	6	23
68.	0	0	1	17	15

TABLE XI (continued)

Item No.	Ratings of Importance				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
69.	3	5	5	11	9
70.	0	1	0	6	25
71.	0	0	3	16	14

APPENDIX F

Department of Vocational Education
The Pennsylvania State University
University Park, Pennsylvania

June 5, 1968

Dear Vocational Educator:

I am writing this letter regarding an opinionnaire I sent to every T. & I. educator in the central region of Pennsylvania on May 6, 1968. I am hopeful that you received the opionnaire and have not returned it to me because of end-of-year duties that made it almost impossible. I am sorry that it had to be sent out at this particular time but circumstances beyond my control dictated the timing.

The purposes for this study were outlined in the original letter so I will not go into any further details except to mention that the area of planning plant facilities has needs of information which I hope to gather from your opinions. This data gathered for the study will be compiled and a report made to each local school vocational administrator; to the Vocational Department of the D.P.I.; and to the T. & I. Area Coordinators in the central region.

Thank you again for the time and effort you have spent on this matter in my behalf.

Sincerely yours,

John L. Peterman

John L. Peterman
512 E. Waring Ave.
State College, Pa. 16801

JLP:kp

APPENDIX G

COMMENTS FROM JURY AND STUDY POPULATION

I would like to see several basic plans developed and put on file to be used by any school district as a nucleus for new planning. Much of the architects fees, etc., could be reduced with this method. Many equipment lists could include 75% of the changes and specifications involved.

As I looked back over my positive responses it occurred to me that it will require a mythical character to fill the position.

Educational specifications are "must" for planning activity.

Use of a resource center for planning will gain information for administration.

I can't see a "facilities specialist" being able to cover all phases.

The Vocational Educator must be aware of the part played by the various agencies, such as local and county planning commissions, departments of highways, departments of health, and various licensing boards such as Cosmetology, etc., in planning a new facility.

Building facilities specialists should be more clearly defined and what is their background.

Experienced vocational teachers and administrators should be assigned the responsibility for planning and operation of new area vocational-technical school programs.

Certification requirements to attain this end should be re-evaluated.

Should be familiar with the bussing and transportation problems of bringing the students to and from school.

Other activities not listed are: (1) Water, gas, electricity, and sewage utilities, (2) traffic control and parking, (3) general and shop storage, (4) utilization of building by outside groups, and (5) building security and outside lighting.